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PERSPECTIVE OF DEVELOPMENT
INDIA: 1960-61 TO 1975-76

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Notes on Perspective of Development India: 1960-61 to 1975-76

1

INTRODUCTION

The purpose of these Notes and the rather formidable volume of statistical materials included in the Appendices is to present a quantitative frame-work of India's development in the 15 year period 1960-61 to 1975-76. The attempt is to identify the essential elements of the problem and to bring out the interdependence of the different sectors in sufficient detail to provide a clearer understanding of the possible obstacle to the growth of the economy. Aggregative analysis dealing only with macro magnitudes are useful to check the general consistency of a detailed plan. But the key problems and bottlenecks are revealed only when detailed analysis at a micro-level is attempted. It is from this realization that work has been done in the Perspective Planning Division, as recommended in the Third Plan, to analyse problems of demand and supply arising from the growth of the national output and the realization of stated social objectives to help in taking consistent and timely decisions regarding the best use of resources and realizing the full potential of growth in the economy. As the real significance of the longterm perspective lies in its value for current decisions, which in the absence of such a view might be inadequate or even inconsistent, calling for costly corrections later, there is a sharp focus on the concrete tasks ahead. Thus a fairly detailed and comprehensive outline emerges for the ten year period 1965-66—1975-76 covering the fourth and the fifth plans, which takes fully into account the expected achievements of the third plan.

2. Fullest use has been made of the studies of the various Working Groups set up by the Planning Commission or the Ministries in connection with the formulation of the Fourth Plan. The Perspective Planning Division was associated with the work of practically all the Working Groups. While the integrated picture, as presented in these notes is by no means a sum-total of the proposals made by the various Working Groups, in most of the crucial magnitudes there seems to be a fair measure of agreement. Besides, the longterm view presented here extends to the period of the Fifth Plan, which most of the Working Groups have not been able to comprehend in their studies so far. As much of the logic of our strategy of development is derived from the attempt to achieve a permanent and satisfactory solution of our problems—sustained improvement of living standards, increasing and adequate opportunities for employment, freedom from balance of payment difficulties despite elimination of foreign aid, reduction of inequalities in income and wealth, a strong and efficient public sector, large expansion of public expenditure on education, scientific research, public health and medical care etc. and not the least, a real upsurge of activity in rural India—the challenges and opportunities of the fourth plan must be viewed against the possibilities of the fifth. General discussions are not likely to be as useful as consideration of concrete tasks conceived as part of a clear and comprehensive analysis.

3. The ground covered in these Notes is vast. The presentation has necessarily to be brief and at most places sketchy. To some extent this is compensated by the abundance of factual data presented in the Appendices.

II

THE PROGRAMME

4. The change in the economy in the 15 year period 1960-61 to 1975-76 purposively brought about through planned effort is our theme. Covering the period of the third, the fourth and the fifth plans, the programmes of 1965-66 to 1975-76 take into account the likely achievements and shortfalls of the Third Plan.

5. The basic objectives which have been kept in view are:

(a) to ensure a minimum consumption of Rs. 20 per capita per month to the entire population by the end of the fifth five year plan, and in particular to improve the amenities of life in the rural areas;

(b) to ensure that the economy will be capable of sustaining an average annual rate of growth of the order of 7 per cent even after 1975-76 without depending on foreign aid;

(c) to achieve a significant increase in the employment opportunities during the next decade; and

(d) to promote a social order which affords equality of opportunity, and which at the same time prevents excessive disparity in income and wealth.

Rate of growth

6. It is an agreed premise of our plans that a high rate of growth sustained over a sufficiently long period is an essential condition for solving the basic economic problems of the country. The Third Plan aimed at accelerating the rate of growth from an average of about 3½ per cent achieved during the decade 1950—60 to about 6 per cent over the period 1961—76. Subsequent studies have, however, shown that this rate of growth would not be adequate to make a significant impact on the problem of mass poverty and unemployment in the course of the next decade. In an earlier paper of the Perspective Planning Division*, it was argued that to achieve the modest target of ensuring a minimum consumption of Rs. 20 per capita per month, national income at the end of the fifth plan (1975-76) would have to be of the order of Rs. 370,000 million (at 1960-61 prices) implying an overall rate of growth of nearly 7 per cent during the period 1961-76.

7. Since the national income at the end of the Third Plan is now expected to be no more than Rs. 180,000 million (as against the plan taget of Rs. 190,000 million), this implies a big acceleration in the rate of development during the decade 1966-1976. This is certainly a difficult task, but as subsequent analysis shows, it is by no means an unattainable objective. Development of this magnitude does not seem to raise any insuperable difficulties whether of organisational capacity, finance or balance of payments, provided we approach the problems in a scientific spirit, with a boldness of vision, and determined action, backed by national will and the united effort of the people.

8. The alternative of not facing these challenges and clinging to the view that rapid development could not be brought about in the country

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**Perspective of Development, India 1961—1976: Implications of planning for a Minimum Level of Living, P.P. Division, Aug. 1962.*

for one supposed reason or another, would needlessly prolong the poverty and degradation of the masses of India for many years to come. The brunt of it will be borne by the under privileged. A slow rate of growth is their worst enemy.

Review of important results

9. Before discussing the details of the programme, a brief review of some of the more important end results expected of it might be useful.

10. *Income and Investment.*—The targets of aggregate income and its disparities between consumption and investment at the end of successive plan periods are summarised in Table 1. Total income is sought to be raised from Rs. 180,000 million in 1965-66 to Rs. 260,000 million in 1970-71 and Rs. 373,000 million in 1975-76. Allowing for the growth of population which is estimated to increase from 439 million in 1960-61 (mid years) to 555 million in 1970-71, and 625 million for 1975-76, per capita national income at the end of the fifth plan works out to be 85 per cent higher than in 1960-61. In constant prices of 1960-61, it is approximately Rs. 600.

11. Even as the income targets imply a much higher rate of growth than contemplated in the Third Plan, investment figures are also higher than shown in the long term projections in the Third Plan. It is envisaged that the rate of capital formation should be raised sharply in the course of the fourth plan from about 14-15 per cent of national income in 1965-66 to 21 per cent by 1970-71. Thereafter, investment is assumed to grow at roughly the same rate as total income.

12. *Balance of Payments.*—The programme postulates a declining volume of foreign aid in successive plan periods both in absolute terms and as a proportion of total investment. At present about 25 per cent of net investment is financed by foreign aid. This proportion is planned to go down to less than 7 per cent by 1970-71, and become nil by 1975-76.

13. Total imports are expected to rise from Rs. 11,200 million in 1960-61 to Rs. 13,600 million in 1970-71, and Rs. 16,100 million in 1975-76. While there is a decline in the volume of foreign assistance, exports are planned to rise from the 1960-61 level of Rs. 6,400 million to Rs. 12,200 million by 1970-71 and Rs. 16,200 million by 1975-76.

TABLE I: *Projection of Aggregate Income, Investment and Consumption, India* 1960-61 *to* 1975-76

(Rs. thousand million.)

Item	1960-61	1965-66	1970-71	1975-76	Annual rates of growth 1960-65	1960-75	1965-70	1970-75	1965-1975
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. National Income .	141·4	180·0	260·0	373·0	5·0	6·6	7·7	7·5	7·6
2. Gross national product at market prices	159·4	204·4	297·8	432·1	5·1	6·9	7·7	7·7	7·9
3. Foreign aid . .	5·2	5·5	3·5	..	..	..	..	..	..
4. Gross domestic expenditure of which	164·6	209·9	301·3	432·1	5·0	6·6	7·5	7·5	7·5
5. Capital formation .	21·0	35·0	63·0	93·0	10·7	10·5	12·5	8·1	10·2
6. Public consumption	11·6	21·0	28·0	39·0	12·6	8·4	6·0	6·9	6·4
7. Private consumption	132·0	153·9	210·3	300·1	3·1	5·6	6·4	7·4	6·9
8. Population (million) .	439	492	555	625	2·4	2·4	2·4	2·4	2·4
9. Per capita income (Rs.)	322	366	468	597	2·6	4·2	5·0	5·0	5·0
10. Per capita consumption (Rs.) . .	301	313	379	480	0·8	3·2	4·0	4·8	4·4

14. *Consumption Standard.*—Total consumption in 1975-76 will be 2·27 times that of the 1960-61 level. In per capita terms this implies an increase of about 60 per cent over the period, or an average annual increase at the rate of 3·2 per cent after allowing for an annual increase in population at the rate of 2:4 per cent. The rate of improvement in consumption standards during the decade 1960—1970, when investment is being stepped up rapidly, is however only 2:25 per cent. Actually since the increase in per capita consumption standards during the Third Plan is expected to be less than 1 per cent per annum, this implies a faster increase (4 per cent per year) in consumption levels during the fourth plan. Thereafter, since the rate of investment is more or less constant, per capita consumption increase at a higher rate, namely 4·8 per cent per annum. This is particularly striking when it is compared with the per capita consumption of less than 1 per cent per annum achieved during the period 1950—65. Reckoned in terms of Rs. per capita per year, while the consumption increase will be only 12 in the five years of the Third Plan; it will be as much as 180 over the fifteen year period 1960-61 to 1975-76.

15. The programme allows for an increase in the availability of all basic consumer goods consistent with the pattern of demand which may be expected consequent on the growth of population and per capita consumption expenditure. The targets of overall production and per capita availability of some major items of consumer goods are shown in Table 2.

TABLE 2: *Per Capita consumption availability of some important commodities: India* 1960-61, 1970-71 *and* 1975-76

Commodities (1)	Unit (2)	1960-61 (3)	1970-71 (4)	1975-76 (5)
1. Total food grains	kgs	163	186	200
2. Edible oil	kgs	3·2	4·3	5·1
3. Sugar and gur	kgs	15	20·5	24·3
4. Milk and milk products	kgs	51	76·8	95·6
5. Tobacco	kgs	0·61	0·76	0·87
6. Fruits and vegetables	kgs	46	59	67
7. Meat, eggs and fish	(index)	100	120	140
8. Cotton textile	metres	14	19·7	23·9
9. Rayon	metres	1	3·4	4·8
10. Soap	kgs	·87	1·44	1·60
11. Drugs and pharmaceuticals	Rs.	1·4	5·4	6·4
12. Kerosine	kgs	4·3	7·7	10·2
13. Electricity (total)	kwh	37	143	201
14. Paper	kgs	·8	2·2	3·2
15. Radios	no/million	640	4500	6400
16. Bicycles	no/million	2390	5950	6400
17. Sewing machines	no/million	680	1980	2880
18. Electric fans	no/million	2415	7210	8800

16. *Social services.*—Along with the increase in the private consumption the programme envisages a faster expansion in free or subsidised education, health and other social services. Great stress is laid on scientific research.

17. *Education.*—Enrolment in elementary education is sought to be more than trebled over the period 1961—1975; enrolment in secondary schools is to be increased four fold and in higher educational institutions by more than 3½ times. By the end of the fourth plan all children between the ages of 5 and 11 and 50 per cent of the 11—14 age group are expected to be in school. By the end of the fifth plan the proportion of children of the age group 6—14 years attending school is assumed to be 90 per cent. Facilities for technical education and training of skilled personnel are to be expanded to a level consistent with the expected growth of the requirement of different categories of skilled workers.

18. In addition to providing for expansion of educational facilities the programme envisages a big increase in scholarships at all levels to enable poor students of merit to develop their talents to the fullest degree.

TABLE 3: *Enrolment of Students at different levels of education* 1961-1976

Level of education		1961	1966	1971	1976
1		2	3	4	5
A. School enrolments					
1 Elementary (6—14)	(million)	41·7	63	92	126·9
2 Secondary (14—17)	,,	3	5·2	8·2	12
3 Total Schools		44·7	68·2	100·2	138·9
B. Percentage of age group					
Primary (6—11)					
4 Boys		81	97	99	100
5 Girls		40	63	99	100
6 Total		61	80	99	100
Middle (11—14)					
7 Boys		34	46	64	100
8 Girls		11	18	34	84
9 Total		23	32	49	90
Elementary					
10 Boys		65	80	87	100
11 Girls		30	48	77	84
12 Total		48	64	82	90
C. Teadhers Training					
13 Elementary	(thousand)	131	288	964	964
14 Secondary	,,	26	50	134	134
15					
D. Higher Education					
Diploma					
16 Technical	,,	67	126	218	321
17 Medical	,,	—	58	221	300
Degree					
18 Technical	,,	50	98	165	265
19 Medical	,,	36	45	85	125
20 General	,,	890	1300	1920	3000

19. A rough measure of the magnitude of expansion in educational facilities financed by the State may be had from the fact that total public expenditure on all educational programmes is sought to be raised from about 2 per cent of national income in 1960-61 to nearly 4 per cent in 1970-71 and 4·7 per cent in 1975-76.

20. *Health.*—In the sphere of public health (see table 4) the programme aims to build up a well balanced structure of rural and urban health centres, hospital facilities and public health organisation. The aim is to extend public health and medical facilities on a reasonably adequate scale to all parts of the country—rural and urban. The expansion of the facilities is proposed to be on a much larger scale in rural areas to make up for present deficiencies. Details of the evolving pattern of the various institutional and organisational facilities are given in Table N. By the end of the fifth plan, the country would have 175,000 doctors 170,000 nurses and 625,000 hospital beds in 1975-76 compared to about 90,000 doctors, 64,000 nurses and 240,000 hospital beds in 1965-66.

TABLE 4: *Selected targets of health services, India*: 1965 *to* 1975.

	1965-66	1960-71	1975-76
(1)	(2)	(3)	(4)
hospital beds per million of population . . .	488	712	1000
doctors per million of population	168·6	194·6	251·2
expenditure on water supply and sanitation (Rs. crores) . .	156[1]	250[2]	400[3]
public expenditure on health per capita (Rs.) . . .	4·3	8·9	15·9

[1] [2] and [3] figures for third, fourth and fifth plan.

21. A big expansion in the scale of effort to propagate family planning is another important feature of the programme. It is envisaged that by the end of the fifth plan the entire country would be covered by a net-work of family planning clinics for providing advice and assistance and for subsidised supply of contraceptives.

22. *Housing.*—In the sphere of housing, provision has been made for housing requirements due to growth of population. Positive improvements in civic facilities form part of the programme, but resources will have to be used on an austerity scale. Greater improvement in the standard of housing will require expenditure of an order which will be difficult to accommodate in the programme for the next 10 years.

23. *Rural amenities.*—An important feature of the programme is its emphasis on raising the productivity and incomes of the rural population and on providing them the basic amenities of education, health service, potable water and communications in adequate measures by the end of the fifth plan. The expansion of educational facilities and of public health and medical services is intended to benefit largely the rural areas, where present deficiencies are sought to be made good. In addition, a much larger expenditure on rural water supply seems essential. Adequate provision is also made specifically for village roads on a large enough scale to remove the isolation of the villages.

24. Even more striking is the programme for rural electrification. By the end of the third plan about 40,000 villages are expected to be electrified; the number is planned to be increased to 100,000 by 1970-71 and 200,000 by 1975-76. Since most of these will be villages of more than

average size, the bulk of rural population will have the benefit of electricity by the end of the fifth plan. The main question is the effective utilisation of the electricity. The best economic use at present will be for irrigation. As very large expansion of irrigation facilities is contemplated, there should be less difficulty in finding good use for electricity supplied to rural areas in coming years.

Diversification of industrial base

25. The programme provides fully for the requirements of agriculture and consumer goods industries consistent with the targets of production for these activities. In addition, a big step up in the investments in the metal, fuel, chemical and machine building industries is envisaged so as to raise the domestic production of these activities to a level which would permit the rate of investment postulated for the fifth plan to be sustained with a smaller volume of foreign assistance than at present. The fulfilment of the investment and production targets in these basic and heavy industries is an essential condition to achieve the objective of self sustained growth. The targets of production for some of the key items of intermediate and capital goods are shown in Table 5.

TABLE 5: *Output of selected industries*: *India* 1960—75:

Sl. No. (0)	Industry (1)	Unit (2)	1960-61 (3)	1965-66 (4)	1970-71 (5)	1975-76 (6)
1	finished steel	000 tonnes	2450	5800	11500	21500
2	alloy and special steel	000 tonnes	..	51	500	1100
3	aluminium	000 tonnes	19	68	240	360
4	copper	000 tonnes	9	36	70	100
5	nitrogenous fertiliser	000 tonnes	99	500	1750	3000
6	phosphatic fertiliser	000 tonnes	54	200	750	1700
7	caustic soda	000 tonnes	99	300	600	1000
8	soda ash	000 tonnes	147	340	700	1000
9	plastics	000 tonnes	10	75	270	550
10	petroleum products	000 tonnes	5800	13000	27000	42000
11	cement	000 tonnes	8000	12000	23000	36000
12	total machinery and equipment	Rs. million	4560	12330	28910	44660
13	coal	mill. tonnes	53	89	140	210
14	iron ore	mill tonnes	11	27	60	90
15	crude oil	000 tonnes	450	6000	12000	15000
16	electricity	000 million kw hrs.	16·4	39·6	79·2	125·5

Income, by Sectors.

26. On the basis of the detailed sectoral targets of production, it is estimated that over the period 1966-76 the net output of agriculture would have to increase at an average annual rate of 4.7 per cent and that

of mining, manufacturing and construction at over 11 per cent a year.[1] The rate of growth of all other activities works out to be slightly higher than that of the aggregate income.

Employment

27. An expansion of output of the order postulated in this paper would also generate a sizeable expansion in employment opportunities both in agriculture and in non-agriculture sectors. It is estimated that even after allowing for fairly large increases in average productivity in every sector, the programme would absorb an additional 50 million people in non-agricultuural jobs during the period 1960-61 to 1975-76, but 20 million will still have to be absorbed in agriculture. The level of investment contemplated in 1975-76 would, however, be adequate to absorb the entire labour force thereafter in non-agricultural activities opening out the possibility of productive work at higher wages not only for new workers, but for the older ones whose income would rise as productivity rises steadily.

28. By this time, it would be reasonable to expect a certain reduction in the rate of growth of population as a consequence of the family planning programme. This will make the employment situation still better. Rapid growth (7-8 per cent per year) of the economy at this stage should start making labour scarce. But it seems too early to worry about that.

The Role of the Public Sector.

29. A big increase in the share of public sector in total capital stock is another distinguishing feature of the programme outlined in this paper. At the beginning of the Third Plan, (see Table 6) it is estimated that approximately a fourth of the reproduced tangible wealth was owned by the public sector. Of the increment during the 15 year period ending 1975-76 (totalling 660,000 million Rs.) nearly two-thirds will be under the auspices of the government and public authorities and by the end of the fifth plan the public would directly own more than half the total capital stock of the country. Such a large increase in publicly owned capital would have a considerable impact on the economy in two ways. First, it will reduce inequalities of incomes arising from excessive concentration of wealth in private hands, second it will facilitate the mobilisation of surpluses of productive enterprises for planned capital formation.

TABLE 6: *Distribution of Reproducible Tangible Wealth Between*

Sector	Capital stock at			
	1960-61(2)		1965-66	
	mining, manufacturing and transport	all sectors	mining, manufacturing and transport	all sectors
(1)	(2)	(3)	(4)	(5)
1 total	84·0	321·6	127·1	425·6
2 private sector	39·4	239·2	53	282·2
3 public sector	44·4	82·4	74·1	143·4
4 public sector as per cent of total	53·1	25·6	58·3	33·7

Source :— P. P. Division studies.
(2) R. B. I. Bulletin, January, 1963.

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[1] It will be noticed that these sectoral rates are roughly the same a indicated by the Planning Commission to provide the basis for studie in the fourth plan (agriculture 4-5%: industry 10—12%).

30. Despite the rapid growth of the public sector, the privately owned stock of capital will be nearly doubled during the period representing a rate of growth never achieved in the past.

31. The foregoing sketch of the end products of the programme of development outlined in this paper emerges from detailed studies done by the Perspective Planning Division. The assumption and methods underlying these studies are discussed in the subsequent section.

III

Approach, Method and Substance

32. The programme aims at raising the national income to Rs. 373,000 million by 1975-76 from about Rs. 180,000 million expected at the end of the Third Plan. As pointed out earlier, this is considered as minimum effort required to make any significant impact on living standards. Indeed per capita consumption would rise only by 3 to 3½ per cent per year despite this increase in national income. This means that we shall have to aim at an average annual rate of growth of 7·5 per cent during the decade 1966—76. On this basis, the income in 1970-71 should be Rs. 260,000 million. The values of the corresponding gross national product (valued at 1960-61 prices) works out to Rs. 298,000 million in 1970-71 and 432,000 million in 1975-76.

33. Starting from the targets of aggregate income, consumption and investment, an attempt has been made to work out:—

(a) the composition of final demand in terms of specific goods and services;

(b) the gross requirements of all commodities, including the demand for intermediate products, consistent with the pattern of final demand and input requirement of various activities;

***Public and Private Sector, India:* 1960-61 *to* 1975-76**

(Rs. thousands million),

the end of				Increase between 1960-61 and 1975-76		Inrease over 15 years with 1960-61-100	
1970-71		1975-76					
mining, manufacturing and transport	all sectors	mining, manufacturing and transport	all sectors	mining, manufacturing and transport	all sectors	mining, manufacturing and transport	all sectors
(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
232	646·6	393	986·6	309	665	468	307
89·3	361·3	141·3	474·3	101·9	235·1	259	198
142·7	285·3	251·7	512·3	207·1	429·9	464	622
61·5	44·1	64	51·9	67·0	64·6	..	..

(c) the level of domestic production of major products consistent with their respective total requirements and the balance of payments constraints; and

(d) the magnitude and pattern of investment required to achieve the target of production.

Disposition of GNP

34. The disposition of the gross national product between investment, public consumption and personal consumption (see Table 7) is derived from the following considerations:—

(a) Consistent with the objective of reducing our dependence on foreign assistance, the deficit in the balance of payments is assumed to fall from Rs. 5,500 million in 1960-61 to Rs. 3,500 million in 1970-71. The country is assumed to reach a position of complete independence from foreign aid by the end of the fifth plan.

(b) The acceleration in the growth of national income would require a faster increase in the rate of investment than is postulated in the long term projections of the Third Plan. Net investment in our model increases to 21 per cent of national income by 1970-71 and may remain about the same in 1975-76.

(c) The level of public consumption has been projected on the basis of targets of expansion in education, health and other social services, the likely increase in current expenditure on other development activities, and past trends in the case of civil administration.

(d) Personal consumption is obtained as the difference between gross domestic expenditure and the projected level of expenditure on investment and public consumption. Until the end of the fourth plan, the main emphasis is on raising the rate of savings to a level adequate to sustain a rapid growth with a smaller volume of foreign aid. Thereafter the savings and investment increase at approximately the same rate as total income and consequently it is possible to provide a faster growth in consumption.

TABLE 7: *Projections of gross domestic expenditure and its disposition, India: 1960-61 to 1975-76*

(Rs. thousand million)

Sl. No.	Item	1960-61	1965-66	1970-71	1975-76	Index 1960-61—100 1965-66	1970-71	1975-76
	1	2	3	4	5	6	7	8
1	net national product at factor cost	141·4	180·0	260·0	373·0	127	184	263
2	Add indirect taxes and misc. receipts (net of subsidies)	11·9	15·7	22·4	33·0	132	188	277
3	Net national product at market prices	153·3	195·7	282·4	406·0	128	184	264
4	Add depreciation	6·1	8·7	15·4	26·1	142	252	428
5	Gross national product at market prices	159·4	204·4	297·8	432·1	128	186	271
6	Add net flow of foreign assistance	5·2	5·5	3·5	..	106	67	..
7	Gross domestic expenditure	164.6	209·9	301·3	432·1	128	183	262
8	Gross capital formation	21·0	35·0	63·0	93·0	167	305	443
9	Public consumption	11·6	21·0	28·0	39·0	180	240	335
10	Private consumption	132·0	153·9	10·3	300·1	117	158	227
11	Net capital formation—private sector	8·0	11·0	19·5	26·0	138	244	325
12	Net capital formation—public sector	8·2	18·0	34·5	52·0	220	421	634
13	Total net capital formation	16·2	29·0	54·0	78·0	179	333	481
14	Current plan outlay in public sector	2·8	4·5	6·0	9·0	161	214	321
15	Public sector plan (12)+(14)	11·0	22·5	40·5	61·0	205	368	555

Final Demand

35. The projected distribution of aggregate final demand between broad groups of commodities is summarised in Table 8.

TABLE 8: *Pattern of gross domestic demand for final uses, India: 1960-61 to 1975-76*

(Rs. thousand million)

	1960-61	1970-71	1975-76	Index 1960-61—100 1970-71	1975-76
(1)	(2)	(3)	(4)	(5)	(6)
Consumption					
1. agriculture	63·4	95·6	122·1	150·8	192·6
2. agriculture based manufacture	32·5	52·2	74·4	160·6	228·9
3. fuel and light	8·0	11·5	14·3	143·8	178·8
4 other manufactured goods	9·5	19·4	32·6	204·2	343·2
5. services	30·2	59·2	95·6	197·4	316·6
6. total consumption	143·6	238·3	339·0	165·9	236·1
Capital formation					
7. machinery	6·3	25·2	37·2	400·0	590·5
8. construction	14·7	37·8	55·8	257·1	379·6
9. of which Steel	0·9	3·3	4·7	366·7	522·2
10. cement	0·4	1·1	1·6	275	400
11. total capital formation	21	63	93	300	442·6
12. total gross domestic demand	164·6	301·4	432·0	183·1	262·5

36. These projections are derived from detailed estimates of the commodity composition of each of the major components of final demand:—

(a) The pattern of personal consumption expenditure in 1960-61 is based on estimates from the 13th round of the NSS. Changes in this pattern consequent on the projected increase in consumption levels are derived on the basis of elasticities for individual items which are also estimated from NSS data.

(b) The distribution of public consumption between broad groups of commodities and services is based on estimates in the ISI. The pattern is assumed to remain constant throughout the period.

(c) The distribution of net investment between machinery, construction and inventories is estimated on the basis of past experience. The relative proportions of these components are found to be more or less stable. The composition of replacement expenditure is derived from certain assumptions regarding the average life of construction and equipment. The requirements of steel and cement for construction are estimated on the basis of norms of requirements per unit volume of construction.

37. In 1960-61 somewhat less than 40 per cent of the aggregate domestic expenditure was absorbed by primary agricultural products; about a third was spent on manufactures and a little over 25 per cent on services and other miscellaneous items.

38. The pattern at the end of the fourth and the fifth plan is substantially different. The demand for primary agriculture grows at a much lower rate than the aggregate, partly because of the relatively low income elasticity of demand for this group of products and partly due to the fact that consumption grows at a slower rate than the aggregate expenditure. By contrast, the demand for manufactures and other products and services grows faster than gross domestic expenditure. This is mainly due to the rapid increase in the ratio of investment to national income during the period. Partly it also reflects the relatively high income elasticity of consumer demand for these items.

39. Another significant feature is that the pattern of demand for manufactures shifts markedly in favour of products derived from non-agricultural raw materials. Their share in total manufactures increases from about 40 per cent in 1960-61 to over 50 per cent in 1970-71 and 1975-76. The shift is even more marked in the case of manufactures required for capital formation, the total requirements of which grows more than twice as fast as the aggregate.

Import substitutes: Machinery

40. The extent to which these requirements are to be met from an expansion of domestic production is largely a function of the supply of foreign exchange from export earnings and foreign assistance. In the present study, the net foreign aid in 1970-71 will be only two-thirds of the amount in 1965-66 although net investment in 1970-71 will be nearly double. Net foreign aid will become virtually nil by 1975-76

This hopeful situation follows upon the assumption of our capability to manufacture most of the goods we need—and are at all in a position to produce economically—accompanied by a measure of success in seizing every opportunity for expansion of exports that presents itself. While no precise projection of future export trends is possible, studies undertaken in the P.P. Division, the Ministry of International Trade and other organisations suggest that it may not be realistic to expect export earnings to be substantially larger than Rs. 12,000 million by 1970-71 and Rs. 16,000 million by 1975-76. On the other hand, it will be unsafe to provide for imports of commodities of value less than Rs. 13,500 million in 1970-71 and Rs. 16,000 million in 1975-76 in the context of a growth of industrial production of the order of 10 per cent per year.

41. A large proportion of these imports will consist of a variety of intermediate goods which cannot be produced economically within the country and for which no satisfactory indigenous substitutes are available. The volume of foreign exchange available for other items will be only marginally higher than the current level of their imports. As the proportion of luxury items and otherwise dispensable goods is small in our imports, the scope for effecting any substantial saving of foreign exchange by curtailing imports of unessential goods is very limited. In these circumstances the only way to meet the growing requirements of a wide variety of consumer, intermediate and capital goods is to increase domestic production at a rate which would progressively reduce dependence on imports to a minimum.

42. The magnitude of import substitution and possibilities of it in he course of the next decade are very striking in the case of machinery and equipment. The total requirement of capital equipment (including replacement demand, at ex-factory prices) is estimated to increase from Rs. 10,500 million in 1965-66 to Rs. 18,900 million by 1970-71 and Rs. 27,900 million by 1975-76. The domestic output of finished machinery at the end of the Third Plan is expected to meet about two-third of total demand in that year. If domestic output remains stationary at the 1965-66 level, there will be need to import Rs. 12,000 million worth of machinery and equipment in 1970-71, and if this situation continues, the gap will widen to nearly Rs. 20,000 million by 1975-76. It would be mpossible to accommodate such large imports within the available upply of foreign exchange. On the other hand, it is neither possible nor desirable to aim at complete self-sufficiency—for there will always be some specialized items of equipment and imbalance in domestic output which will make imports necessary. Moreover, by allowing some mports, the door is kept open for the inflow of new techniques, which re constantly being developed in the advanced countries.

43. Because of these considerations, provision is made in the foreign exchange budget for import of the order of Rs. 2,000—2,500 million at he end of the fourth and the fifth plans. But in order to keep imports o this level, domestic production will have to be nearly quadrupled in he course of 1965-75—*i.e.* at an average annual rate of about 15 per ent. The rate of expansion during the fourth plan when investment being stepped up at a faster rate, will however have to be even higher 0 per cent per annum). The total demand for equipment, the level domestic production and imports envisaged at the end of successive an periods is shown in Table 9.

TABLE 9: *Requirements, production and import of machinery and equipments, India:* 1965-66, 1970-71, *and* 1975-76

(Rs. million)

		1965-66	1970-71	1975-76
(0)	(1)	(2)	(3)	(4)
1.	demand of capital goods (at ex-factory prices) . .	10500	18900	27900
2.	domestic supply of capital goods (at ex-factory prices) .	6730	16720	25440
3.	imports	5470	5320	5730
4.	whole equipment	3770	2180	2460
5.	parts and components	1700	3140	3270

Source : Appendices B. 4, F.

Consistency: Material Balances

44. The volume of different intermediate goods and services required to sustain the output targets for goods entering into final demand have been estimated on the basis of commodity balances, the latest available information on unit input-requirements for different sectors. The targets for domestic production were decided after taking into consideration the possibilities of increasing domestic output and the constraint imposed by the supply of foreign exchange. Detailed balances have been worked out for important agricultural products, manufactures, power and transport to ensure that the supply of various commodities is consistent with their respective demands and that the levels of production in different activities are mutually consistent. Detailed balances for important items of agricultural commodities and manufactures as well as for fuel, power and transport are given in Appendices C and D.

Agriculture:

45. Targets of gross domestic production for major agricultural products are shown in Table 10. Since the bulk of the demand for farm produce can be related directly to the requirements of final consumption and exports, their projection presents no serious problems, in principle.

TABLE 10: *Targets of agricultural products, total and selected items, India:* 1960-61 *to* 1975-76

Sl. No.	item	Unit	1960-61	1965-66	1970-71	1975-76
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1.	food grains	mil. tonnes	81	90	122	151
2.	oil seeds	,,	6·6	7·5	11·2	15·7
3.	cotton	th. bales	5390	6344	9800	13500
4.	sugarcane	mil. tonnes	10·6	11	13·2	17·8
5.	tea	th. tonnes	310	408·2	430·9	494·4
6.	jute	th. bales	3982	6163	7338	9295
7.	tobacco	th. tonnes	427·8	548	674·5	852·8
8.	fruits & vegetables . .	mil. tonnes	20·5	n.a.	32·7	41·9
9.	milk & milk products .	mil. tonnes	22·4	25·4	42·6	59·8
10.	gross value of total agricultural output* . . .	Rs. million	86828	99018	132647	1684 4
11.	net value of total agricultural output* . .	Rs. million	67446	75416	97048	120090

Source : Appendix B. 1.

*including agriculture, animal husbandry, forests and fisheries. The intermediate demand, mostly for seed, feed, stocks and wastage, is estimated on the basis of certain conventional norms No allowance has been made for additional imports.

46. The gross output of agriculture and animal husbandry taken as a whole, will have to be nearly doubled during the period 1961—1976. This implies an average annual rate of growth of 4·5 per cent for the period as a whole. However, since the growth of farm output during the current plan is expected to average no more than the 2—2·5 per cent per year the fulfilment of these targets would call for an expansion of gross output, at the rate of more than 5 per cent during the fourth and the fifth plans.

47. The acceleration in the overall rate of growth of the agricultural sector has to be accompanied by changes in the pattern of output. While it is important to provide adequate resources for increasing foodgrains production by the required magnitude, the changing pattern of demand requires, that, over the longer period, the programmes for agriculture be geared increasingly to the development of commercial crops and animal husbandry. The additional output of livestock products, fruits and vegetables, in particular is of a much larger magnitude than is generally appreciated.

48. The rate at which living standard can be improved over the next decade is very largely a function of the behaviour of agricultural output (which accounts directly or indirectly for nearly two thirds of total consumption) and the development of this sector must be given the highest priority. On the basis of available evidence, there is good reason to believe that the level of farm output envisaged in this paper is technically feasible of attainment.[1] The programme provides fully for the investment in irrigation land improvement and other 'infra-structure' as well as for ensuring the supplies of fertiliser and other material inputs needed to achieve the targets.

49. But this alone will not be sufficient to bring about a large increase in farm output. The crux of the problem is to get millions of farmers to absorb the inputs made available by public investment and improved techniques which go with them. This calls for, among other things, a vast improvement in the efficiency of the extension service and the organisation of supplies, credit and marketing; the creation of strong and well-equipped organisations at the local levels to formulate and execute detailed programme suited to local conditions and problems; a well thought-out policy of price supports and subsidies; a careful selection of products and areas to increase production rapidly in the relatively short period. Our ability to accelerate the growth of agricultural production will largely be determined by the success with which these problems are tackled. If as a result of efforts in these directions, farm output can be increased faster than visualised in this paper, it would also be possible to provide a more rapid increase in employment opportunities and improvement in living standards.

Industries.

50. Given the fact that the elasticity of consumer demand for manufacturing is higher than for agriculture and since investment is being stepped-up rapidly, it follows that the industrial sector will have to expand faster than agriculture. The programme implies an average annual rate of growth of net industrial output of about 10 per cent over the

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[1] See (1) PP Division Paper, "Development of Agriculture, India 1960-61—75-75" January 1964. (2) Agriculture Working Groups Reports.

period 1966—1976 the rate of expansion being somewhat higher in the fourth plan than in the fifth.

51. Unlike in agriculture, where the changes in level and composition of output are related primarily to the growth of consumer demand, the pattern of industrial production during the next decade is determined largely by the step up in the rate of investment and the urgent need to reduce the dependence on imported raw materials and equipment. As pointed out earlier (see Table 9) the domestic production of investment goods has to be stepped up nearly twice as fast as manufactured consumer goods. Of the manufactured consumer goods again, the requirements of items based on non-agricultural raw materials was shown to increase much more rapidly than for agriculture based goods. Moreover, a large increase on the supply of fertiliser and other manufactured products will have to be planned if the targets of agricultural production are to be realised. For these reasons we should expect the requirements for manufactured raw materials and intermediate products to increase at a higher rate than the average for the manufactured products as a whole.

52. At present a fairly large fraction of the requirements of intermediate goods is met by imports. Clearly, the prospective increase in the supply of foreign exchange is too small to permit continued imports on a large scale. The need to expand domestic production and to minimise the dependence on imports is therefore just as compelling in the case of intermediate goods as it is in the case of machinery and equipment. For this reason, it is envisaged that except for highly specialised items (*e.g.* certain categories of chemicals, metals and components) and such products as phosphate rock, sulphur, ferrous and non-ferrous metals and crude oil which cannot either be produced at all or produced only in limited quantities domestically, the country should strive to meet the requirements from domestic output to the maximum extent possible (see Appendices B and F.)

53. Table 11 summarises the projections of the net value of output at the end of the successive plan periods in major categories of manufacturing industry. In 1960-61 approximately half the total output was from small scale and household industry which are engaged mostly in agricultural processing and manufactures of consumer goods. In the organised sector again, the food and the textile group of industries was dominant. The industries producing intermediate and capital goods accounted for less than one-fourth of the total industrial production.

54. The programme of development envisaged in this paper implies a marked change in the structure of manufacturing activities. The most striking feature is that the net output of capital goods and intermediate industries increases nearly ten-fold over the 15 years period ending 1975-76. Consequently the relative importance of these two groups of industries measured by their share in total industrial output rises rather sharply from less than 23 per cent. in 1960-61 to about 48 per cent in 1970-71 and to 51 per cent. in 1975-76.

55. Another important feature to be noted is the very high rate of growth (18 per cent per year) of these groups of industries during the fourth plan. This is the combined result of import substitution and acceleration of capital formation in the fourth plan. In the subsequent period, these factors no longer being operative, the rate of expansion of this group of industries falls to a much lower figure of over 10 per cent.

TABLE II: *Structure of manufacturing industries, India 1960-61—1975-76.*

Sl. No.	Items	Net value of production (Rs. million)				Annual percentage increase			
		1960-61	1965-66	1970-71	1975-76	1960-61 to 1975-76	1965-66 to 1975-76	1970-71 to 1975-76	1965-66 to 1970-71
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Consumer goods industries [1]	4,236	5,468	8,146	11,970	7·4	8·1	8·0	8·2
2	Intermediate goods industries [2]	3,491	8,518	18,926	32,097	15·9	14·2	11·1	17·3
3	Machinery [3]	1,513	4,227	9,899	15,422	16·8	13·8	9·3	18·6
4	Others	68	128	254	403	12·6	12·1	9·6	14·7
5	Large factories—sub total	9,308	18,341	37,225	59,842	13·2	12·5	9·9	15·2
6	Small factories	1,288	2,646	5,558	8,704	13·6	12·6	9·4	16·0
7	House-hold industries	8,190	9,990	15,210	22,340	6·9	8·4	8·0	8·8
8	Total small enterprises (6) + (7)	9,478	12,636	20,768	31,044	8·2	9·4	8·4	10·5
9	Adjustment for coverage	2,604	2,604	2,604	2,604	..	..	..	..
10	Grand Total	21,390	33,580	60,600	93,490	10·3	10·9	9·0	12·5

Source : Appendices A and B

[1] Include food products, textile products and rubber and leather products.

[2] Include paper, wood etc. products, non-metallic mineral products, chemical products, metals and metal products. electronics and electricity.

[3] Include electrical engineering, transport equipment and industrial machinery.

56. The large expansion in the domestic production of intermediate and capital goods is of critical importance for balance of payments viability. For this reason they deserve a very high priority in our scheme of development over the next decade and more particularly during the fourth plan. The two major areas on which particular attention needs to be given are steel and machine building. These two items alone accounted for 40 per cent of total imports in 1960-61 and even after allowing for maximum possible import substitution they will continue to absorb nearly half of available supply of foreign exchange in 1970-71 and 40 per cent in 1975-76.

57. There is also substantial expansion in industries producing consumer goods and of small scale industries. For reasons explained the growth of output of these industries has necessarily to be lower than that of the intermediate and capital goods sectors. The net output of large scale factories establishments, producing predominantly consumer goods, increases at an average annual rate of 8 per cent during the fourth and fifth five year plans fully corresponding to the demand for these products. The expansion of agricultural production and industrial raw materials would provide opportunities for a substantial increase in the output of small scale industries. Moreover, it has been assumed that small scale

units will be encouraged to the maximum extent possible in consumer goods and agriculture processing industries, where large investments are not required and economies of scale are relatively unimportant. The net output of small industries taken as a whole increases at nearly 9 per cent during the decade 1966—1976.

Fuel, Power and Transport

58. The growth of industrial production envisaged in the programme would require a large expansion in the output of fuels, electricity, and transport facilities. Detailed balances for fuels, coal, petroleum, electricity and rail transport are given in Appendices C & D. The estimates are summarised in Table 12. The total requirements of coal would increase from about 89 million tonnes at the end of the Third Plan to 137 million tonnes in 1970-71, and 207 million tonnes in 1975-76. The electricity generated would increase from 47 billion kwh in 1965-66 to 95 billion kwh in 1970-71 and 150 billion kwh in 1975-76. The requirement of motor spirit and high speed diesel oil increases from 14·8 million tonnes in 1965-66 to 27 million tonnes in 1970-71 and to 42 million tonnes in 1975-76. The relatively faster growth in petroleum fuels, compared to coal, reflects the increasing role of diesel traction on railways (consequent on the decision to discontinue further addition of steam locomotives) and the greater emphasis on development of motor transport during the next decade. The total volume of goods traffic is estimated to increase by nearly 150 per cent during the decade 1966—76, the increase in the fourth plan being 60 per cent.

TABLE 12: *Demand for energy and transport, India* 1965-66—1975-76.

Sl. No.		Unit	1965-66	1970-71	1975-76
(0)	(1)	(2)	(3)	(4)	(5)
	Energy				
1.	Coal	m. tonnes . .	89	137	207
2.	Petroleum products . .	m. tonnes . .	14·8	26·7	42
3.	Electricity generation . .	billion kwh . .	47·5	95·1	150·6
	Transport				
4.	Total volume of goods traffic .	billion tonne kms .	197	328	500
5.	Of which railways . .	,, . .	144	226	318
6.	Total volume of passenger traffic	billion passenger kms	184	261	378
7.	Of which railways . .	,, . .	97	121	151

IV

OUTPUT, INVESTMENT, EMPLOYMENT AND BALANCE OF PAYMENTS

59. On the basis of the detailed projections of the output levels, the sectoral growth of income and employment and the total investment required to fulfill the targets of production have been estimated.

Pattern of Income

60. Table 13 sets out the estimate of the sectoral distribution of income at the end of successive plans. The rate of growth of net income from

agriculture and related activities over the period 1966—76 is 4·7 per cent per annum; the net output of mining, manufacturing and construction increases at an average rate of 11·4 per cent during the decade 1966—76, the rate of growth during the fourth plan being somewhat higher, at 12·5 per cent per annum. Within the manufactured sector, organised mining and factory establishments grow at a faster rate than small enterprises.

61. Income from construction is assumed to grow at the same rate as net investment, that is at the rate of about 11 per cent over the period 1966—76, and 13·9 per cent during the fourth plan when there is accelerated step up in investment.

62. Income from transport and communications is derived from detailed projections of growth of transportation activities corresponding to the growth of commodity output in different sectors. Since the bulk of the demand for additional transport arises from the growth of industry the income from transport increases at a fairly high rate, namely 10 per cent a year.

63. The income from government administration is estimated on the basis of the projected growth of public consumption expenditure, details of which are given in Appendix J.

64. The growth of income from other activities is related to the level of commodity output or the growth of aggregate national income.

65. Because of the differences in the relative rates of growth of different sectors, their relative weight changes appreciably during the period. The share of agriculture in total income falls from about 43 per cent in 1965-66 to less than 33 per cent in 1975-76, while that of mining and manufacturing rises sharply from about 19 per cent at the end of Third Plan to nearly 27 per cent at the end of the fifth. Incomes from all other sectors rise at a higher rate than total income and improves its share slightly from 38 per cent in 1965-66 to 40 per cent in 1975-76.

Employment

66. The pattern of employment corresponding to the growth of income over the 15 year period is shown in Table 14. In making these projections it has been assumed that during the fourth plan the average net output per worker will increase at the rate of 2½ per cent per annum in the case of agriculture, small enterprises, construction, commerce, profession and other services. In the case of organised mining and manufacturing and transport a somewhat higher rate of increase (3 per cent per annum) has been estimated after allowing for the shift in form of capital intensive activities. The net output per worker in Government administration is assumed to grow at the same rate as average wages and salaries per worker in this sector. This works out to approximately 3 per cent a year. Since the addition to capital stock during the fifth plan is much larger than in the fourth and since technological improvements are constantly taking place, a higher rate of productivity increase will take place during the fifth plan than in fourth. It is assumed that the net output

TABLE 13: *Adjusted estimates of national income by*

	Industrial sectors	National Income (Rs. million)			
		1960-61	1965-66	1970-71	1975-76
	1	2	3	4	5
1	Agriculture including animal husbandry, fishery & forestry	68,850	76,815	98,450	1,21,490
2	Small enterprises	8,190	9,990	15,210	22,340
3	Mining	1,630	2,600	4,520	6,950
4	Factory establishments, including power	13,200	22,290	42,630	71,150
5	Sub-total (2 to 4)	23,020	34,880	62,360	1,00,440
6	Construction	3,010	5,400	10,320	15,230
7	Communication	630	910	1,420	2,385
8	Transport including railways	5,520	7,910	13,110	20,600
9	Organised banking and insurance	1,610	2,515	4,130	7,185
10	Other commerce	15,710	18,950	27,020	37,960
11	Professions liberal arts and 'domestic services	9,350	11,700	16,920	24,560
12	Government services	9,070	14,470	18,850	27,280
13	House property	5,310	6,460	8,910	11,930
14	Unallocated	..	..	..	3,940
15	Grand—Total	1,42,080	1,80,010	2,61,490	3,73,000

Source : P. P. Division study : Notes on Perspective of Development, statement A. 1, B. 2. and

Note : Although rates of production as indicated in statement B. 2 and B. 3 for 1965-66 and approximately by half the annual rate of growth. Adjustments have been accordingly

Industrial origin, India, 1960-61 *to* 1975—76

(at 1960-61 prices)

Percentage to total				Average annual rate of growth percentage				
1960-61	1965-66	1970-71	1975-76	1965-66 over 1960-61	1970-71 over 1965-66	1975-76 over 1970-71	1970-71 over 1960-61	1975-76 over 1960-61
6	7	8	9	10	11	12	13	14
48·5	42·7	37·7	32.6	2·3	5·1	4·3	3·7	3·9
5·8	5·6	5·8	6·0	4·0	8·8	8·0	6·4	6·9
1·1	1·4	1·7	1·8	9·8	11·7	9·0	10·8	10·1
9·3	12·4	16·3	19·1	11·0	13·9	10·8	12·5	11·9
16·2	19·4	23·8	26·9	8·6	12·3	10·0	10·5	10·3
2·1	3·0	4·0	4·1	12·4	13·9	8·1	13·1	11·4
0·4	0·5	0·5	0·6	7·6	9·4	11,0	8·5	9·2
3·9	4·4	5·0	5·5	7·5	10·6	9·5	9·1	9·1
1·1	1·4	1·6	1·9	9·4	10·4	11·7	9·9	10·5
11·1	10·5	10·3	10·2	3·8	7·4	7·0	5·6	6·0
6·6	6·5	6·5	6·6	4·6	7·6	7·7	6·1	6·6
6·4	8·0	7·2	7·3	9·8	5·5	7·6	7·6	7·6
3·7	3·6	3·4	3·2	4·0	6·6	6·0	5·3	5·6
..	..	..	1·1	..	..	..	..	..
100·0	100·0	100·0	100·0	4·8	7·8	7·4	6·3	6·6

B. 3.

1970-71 may be reached by the end of the year the whole year production may be less made in the expected out putsfor items 3,4 and 7 to 11.

per worker in the two groups of activities mentioned earlier will increase at the rate of 3·5 per cent and 4 per cent per annum respectively, allowing for a uniform increase of 1 per cent for each sector.

TABLE 14: *Sectoral distribution of employment, India,* 1960-61—1975-76.

(In million)

Sl. No.	Sector	1960-61	1970-71	1975-76	Increase in 1970-71 over 1960-61	Increase in 1975-76 over 1970-71	Increase in 1975-76 over 1960-61
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Agriculture including animal husbandry, fishery and forestry	120·8	134·9	140·2	14·1	5·3	19·4
2	Small enterprises	15·9	23·0	28·5	7·1	5·5	12·6
3	Mining and factory establishments	5·0	11·8	16·0	6·8	4·2	11·0
4	Construction	2·0	5·5	6·8	3·5	1·3	4·8
5	Transport & communications	3·0	5·4	7·2	2·4	1·8	4·2
6	Government services	5·8	8·9	10·6	3·1	1·7	4·8
7	Others	21·4	29·9	36·2	8·5	6·3	14·8
8	Total	173·9	219·4	245·5	45·5	26·1	71·6
	Estimated labour force, excluding children 14 years and less	173·9	218·4	244·5	44·5	26·1	70·6

Source : P.P. Division studies.

67. On the basis of these assumptions, it would appear that nearly three-fourth of the increase in labour force during the period 1960—75 (estimated at about 70 million) can be provided jobs in non-agricultural activities. Of the total increase of the non-agriculture employment during the period (50 million) about 30 million will be in the period 1961—71 and 20 million during the fifth plan.

68. The rate of investment contemplated in 1975-76 (Rs. 78,000 million) would be adequate to provide an annual increase in non-agricultural employment of the order of 6 million per year which is roughly the rate at which labour force will be increasing by that time. This level of investment may still not prove adequate to provide well-remunerated work for all. The tempo of growth would need to be maintained and even accelerated to reach this satisfactory situation.

69. The programme calls for total investment of Rs. 660,000 million during the period 1961—76. Of this it is envisaged that Rs. 220,000 million would be invested in the fourth plan period and Rs. 340,000 million in the course of the fifth. The distribution of total investment between different sectors is shown in Table 15.

ABLE 15: *Estimated net investment in the public and private sector and current outlays of the public sector in the fourth plan and total investment in the Fifth Plan.*

(Rs. million)

Head	Fourth Plan					Fifth Plan
	Total outlay in public sector	Current outlay in public sector	Net Investment			
			Public sector (2)—(3)	Private sector	Total	Total investment
1	2	3	4	5	6	7
Agriculture and allied activities . . .	16,900	6,400	10,500	10,300	20,800	34,000
Including minor irrigation . . .	2,350	..	2,350	2,350	4,700	8,000
Major and medium irrigation . . .	11,200	..	11,200	..	11,200	16,000
Large-scale industry and mining . . .	35,800	..	35,800	28,600	64,400	1,00,000
Village and small scale industry . . .	5,000	2,000	3,000	4,000	7,000	10,000
Power . . .	22,500	..	22,500	500	23,000	34,000
Transport, communication & tourism . .	32,750	..	32,750	7,750	40,500	61,000
Education & scientific research . . .	16,450	10,000	6,450	250	6,700	11,000
Education . .	13,950	8,700	5,250	250	5,500	8,600
Scientific research .	2,500	1,300	1,200	..	1,200	2,400
Medical and public health and family planning . . .	10,050	3,300	6,750	250	7,000	10,000
Incl. drinking water supply . . .	2,500	..	2,500	..	2,500	4,500
Housing (urban & rural) commercial buildings and urban improvement . . .	7,000	..	7,000	20,000	27,000	43,000
Sub-total net fixed investment . . .	1,57,650	21,700	1,35,950	71,650	2,07,600	3,19,000
Inventories . .	6,500	..	6,500	7,500	14,000	21,000
Net investment . .	1,64,150	21,700	1,42,450	79,150	2,21,600	3,40,000

Source : P. P. Division studies.

70. Broadly speaking the estimates for mining, manufacturing, trans-
ort, education, health are derived from the detailed targets of production
nd the latest available information on the investment cost per unit of
dditional capacity. In making these estimates allowance has been made
r the gestation lags between various branches of activities between
eation of activities and the realisation of full production. In the case
all important manufacturing industries, mining and power and trans-
ort where the gestation periods are relatively long the targets of capa-
ty for 1970-71 and 1975-76 are higher than the targets of actual output.
he basis for investment estimates for the fourth plan are discussed in
me detail in Appendix M. For this period, current outlay in the public
ctor plan has also been estimated.

Balance of Payments

71. Finally, before closing this section, we consider in brief t
critical problem of balance of payments. The details of India's expo
imports and net position on invisible account are given in Appendi
E, F & G. Table 16 below summarises the position as anticipated
1965-66, 1970-71 and 1975-76.

TABLE 16: *Balance of Payments on Current Account*: *India* 1965-66, 1970
and 1975-76.

(Rs. million

Sl. No.		1965-66	1970-71	1975-
(0)	(1)	(2)	(3)	(4)
1	Exports	8,380	12,250	16,2
2	Imports	12,520	13,600	16,1
3	Invisibles (net)	(—)700	(—)1,230	(—)9
4	Gap (1)—(2)+(3)	(—)4,840	(—)2,580	(—)7

Source : Appendicies E, F and G.

72. The above table shows that if the targets of exports and domes
production are fully realized, the balance of payment gap would shri
from about Rs. 5,000 million in 1965-66 to Rs. 750 million in 1975-76.
a result India's reliance on external assistance will terminate by 1975-
and the country would thereafter be able to achieve self-sustain
growth. The small gap of Rs. 750 million in 1975-76, less than 5 per ce
of India's export at that time, would be covered by anticipated infl
of private foreign capital and credits through normal commerc
channels. Such marginal inflow of capital can be expected to contin
in the future also.

73. The deficit in the balance of payment according to table 16 wou
be Rs. 4,840 million in 1965-66 and Rs. 2,580 million in 1970-71. Ho
ever, to guard against any possible shortfalls, either in exports or indu
trial production, credit has been taken for external assistance of t
order of Rs. 5,500 million in 1965-66 and Rs. 3,500 million in 1970-71.

74. It thus appears that the attainment of a high rate of grow
without continuing dependence on foreign aid is well within reach
1975-76. However, success would largely depend upon our capacity
carry out the production tasks set out in this provisional outline a
expand exports at a fast rate.

75. To a still greater extent, the achievement of the goal of se
support would depend upon the realization of the targets of industri
production set for 1970-71 and 1975-76 especially in the spheres of meta
and machinery. If for instance the domestic production of steel,
particular year is short by about 1 million tonne as compared to antic
pated output, it would increase the gap by Rs. 600—700 million. Sim
larly if the output of machinery is put back by one year, the gap wou
be widened by Rs. 2,000—3,000 million. This emphasizes the need f
speedy implementation of the targets set in the plan. Critical impor
ance of expanding the domestic supply of oil also deserves to be stress
in view of the quantitative importance of oil import in a growi
economy.

V

OPERATIONAL FEASIBILITY

76. In any plan, which is not purely academic, it is important to be reasonably sure that the tasks are physically and organisationally feasible of attainment. By its very nature this is a matter on which a firm judgement can be made only in the light of detailed studies and thorough technical understanding of the implications of the targets in particular sectors. This task falls appropriately within the purview of the various technical organizations and enterprises and of the Working Groups set up by the Planning Commission. These groups, which consist of technical experts, representatives of the executive Ministries and of the enterprises both from the public and the private sectors, have suggested a tempo and pattern of development which corresponds broadly to the programme outlined in this paper. Moreover, none of the Working Groups seem to have expressed any serious reservations about the possibility of achieving the targets.

77. We are entering a phase of development where the structure of activities particularly in the manufacturing sector is becoming increasingly diverse and complex. It is of the utmost importance that we have a carefully planned and properly coordinated programme for increasing the domestic capacity with due regard to the gestation lags in different sectors. Without such a coordinated and foreseeing programme, the full potential of the economy will not be realized. There will also be the danger of imbalances emerging and since the facility of correcting such imbalance through foreign trade is not open to us, they are bound to seriously hamper the overall rate of advance.

78. Of particular importance in this connection are metals, machinery, fertilisers, coal, oil, power and transport and major irrigation. To this must also be added programme of higher technical education, scientific research and survey of natural resources. These are the critical sectors from the view point of balance of payments and of development in general. It is precisely in this area that gestation lags are long. Since the planning of these activities involved complex problems of organisation and training and since it takes several years to design and build plants it is essential that firm decisions should be taken within next few months regarding the scale of development and necessary clearances given for the preparation of the project reports and such other advance action as may be necessary. The Working Groups have in most of these cases indicated not only the overall targets but also tentative suggestions regarding specific locations and the scale of output to be planned for at each location. This provides good basis for taking concrete decisions.

79. The major shortcoming in the public sector is the absence of technical organizations for planning, designing, engineering and constructing complex enterprises in the many fields of vital importance mentioned above. It is difficult to imagine how big tasks in the public sector can be conceived, planned and executed without bringing into position very early the requisite technical institutions and organization on the very large scale and specialisation urgently called for. These deficiencies are being made good but a more determined pursuit of these objectives is necessary.

VI

FINANCE FOR DEVELOPMENT

80. One cannot estimate the resources available for the fourth and the fifth plan without specifying at least an outline of the Plan, and postulating its magnitude and effects. For the amount of resources available depends on the Plan itself. The question of how much resources can be raised for investment cannot be answered until we know the volume and pattern of the production, the investment target and its composition, the position regarding supply of basic necessities, the situation regarding balance of payments and many other considerations. The problem of financing of development plans is thus closely linked with the nature of the physical tasks for which resources need to be mobilised. It is not appropriate to look at the problem of resource mobilization mainly in financial terms *i.e.* of setting targets for investment expenditure in the light of financial resources that could be raised by borrowings and small savings, external assistance, taxation and so on and then in the light of assumptions concerning the possible yield from each of these sources, arriving at some judgment as to what programme of investment could be considered appropriate. Indeed, the right approach is to investigate closely the nature of the problems to be tackled, the nature of solution to be sought, the concrete tasks to be carried out, the physical resources, skills, and organisational effort to be mobilised for the purpose. If these appear to be operationally feasible, it should be possible to devise policies by which the finances can be found to facilitate the process of mobilisation of the real resources.

81. It is for this reason that the consideration of the financial problem has been deferred till the end, after a concrete outline of the Plans to be financed has been presented, its various internal consistencies and balances checked and its physical feasibility and inability from the point of view of balance of payments has been ensured. The upshot of the discussion of the preceding sections is that a programme of the magnitude and character outlined in this paper is desirable, and operationally feasible. The question remains how best to finance it.

82. For securing a rate of increase of about 7·5 per cent in national income in the fourth and the fifth plans consistent with the goal of self-sustained growth, as already discussed, it has been estimated that investment of the order of Rs. 220,000 million in the fourth plan and Rs. 340,000 million in the fifth plan will be necessary. Estimates of investment for the fourth plan in different sectors have been presented in Appendix M. The estimates for the fifth plan have been roughly prepared by adopting a similar approach. This implies that the level of investment must steadily rise from Rs. 16,200 million in 1960-61 and the estimated level of Rs. 29,000 million in 1965-66 to Rs. 54,000 million in 1970-71 and Rs. 78,000 million in 1975-76. This implies stepping up of the rate of investment from some 11 per cent of the national income in 1960-61 to about 21 per cent in 1970-71 and 1975-76. We have not to examine in what conditions the financing of this order of investment would be feasible.

Main assumptions

83. The estimates of financial resources have been worked out to correspond with assumptions regarding the rate and time pattern of growth, the time lags between investment and output, and distribution of total investment in the public and the private sectors as contemplated

in the outline of development. The further assumptions made are as follows:

1. Targets of production as given in Appendix B will be substantially realized.
2. The external assistance for plan investments will decline from some Rs. 5,500 million in 1965-66 to Rs. 3,500 million in 1970-71 and will be nil in 1975-76. Its main role will primarily be to fill the gap in the balance of payments rather than to supplement domestic savings.
3. The rate of return on capital from private corporate sector will be as high as at present *i.e.* about 13 per cent.
4. The productive efficiency and the pricing policies of the public sector enterprises will be such as to yield a return of 10 per cent on investment; this return would accrue with a lag of between two to four years from the year of investment, as discussed in Appendix M.

Implications

84. Anticipating the brief discussion of the paragraphs that follow, the results of our analysis, elaborated in Appendices E, F, G, J, K, L and M are presented in table below. It gives the estimates of total investment, external assistance, domestic savings and their sources in 1960-61, 1965-66, 1970-71 and 1975-76.

TABLE 17

Investment, External Assistance and Domestic Savings: India: 1960-61 to 1975-76

(Rs. million at 1960-61 prices)

	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
1. National income	141,400	180,000	260,000	373,000
2. Total net investment	16,200	29,000	54,000	78,000
3. Net foreign inflow	5,200	5,500	3,500	..
4. Domestic savings	11,000	23,500	50,500	78,000
5. Net government savings	1,350	5,800	19,800	35,400
6. Net surplus on current account*	850	2,250	12,300	19,100
7. Net earnings of public enterprises	500	3,550	7,500	16,300
8. Private savings	9,650	17,700	30,700	42,600
9. Corporate savings	900	1,600	3,100	5,000
10. Personal savings	8,750	16,100	27,600	37,600
11. Personal savings as percentage of national income (10÷1)	6·2	8·9	10·6	10·1
12. Net government savings as percentage of national income (5÷1)	0·9	3·2	7·6	9·5
13. Corporate savings as percentage of national income (9÷1)	0·6	0·9	1·2	1·3
14. External assistance as percentage of national income (3÷1)	3·7	3·1	1·3	..
15. Total domestic savings as percentage of national income (4÷1)	7·8	13·1	19·4	20·9

*Including additional taxation.

Investment: Public and Private

85. The distribution of investment between the public and the private sectors, as contemplated in the programme of development, is summarised below:

(Rs. million)

	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
Total net investment	16,200	29,000	54,000	78,000
Public sector	8,200	18,000	34,500	52,000
Private	8,000	11,000	19,500	26,000

86. As the current outlay of the Plans is already part of revenue expenditure in our treatment (see Appendix J), the task of financial mobilization in the public sector is limited to finding an amount of Rs. 34,500 million in 1970-71 and Rs. 52,000 million in 1975-76. For the sake of simplicity and brevity, the intervening years have been left out. The fiscal task is to mobilize resources of the order required, leaving sufficient investible funds for the plan provision for investment in the private sector.

Financing Investment

87. *Public Sector*: The scheme of financing for investment in the public and the private sectors is given in the following table:—

TABLE 18

Financing of Public Sector Investments, India, 1960-61, 1965-66, 1970-71 *and* 1975-76.

(Rs. million)

Sl. No.	Head	1960-61	1965-66 desired level on latest assessment	1970-71	1975-76
(0)	(1)	(2)	(3)	(4)	(5)
1	Total investment financed out of	8,200	18,000	34,500	52,000
2	Balance on revenue account	850	2,250*	6,300	11,200
3	Surplus of public enterprises	500	3,550†	7,500	16,300
4	Absorbed through personal savings	1,950	7,180	11,700	16,600
5	(*i*) market borrowings	1,500	2,700	4,450	7,250
6	(*ii*) small savings	1,060	1,400	1,800	2,200
7	(*iii*) annuity deposits	..	700	600	400
8	(*iv*) provident funds	600	750	1,050	1,450
9	(*v*) deficit financing	(—)1,100	1,500	2,500	3,250
10	(*vi*) other misc, capital receipts	(—)110	150	1,300	2,050
11	External resources	4,900	5,000	3,000	..
12	Gap to be covered by additional taxation	..	..	6,000	7,900

*Including additional taxation of Rs. 700 million expected to be levied in 1965-66.

†On the assumption that all enterprises other than Railways and P. & T. will earn a return of 10 per cent. The return for Railways and P. & T. are assumed at 6 per cent.

Source : Appendices J, K and L.

88. The sources of public finance for investment and current outlay the fourth and fifth plans have been considered under the following n heads in Table 18:—

1. Net surplus on current account (at 1965-66 rates of taxation).
2. Borrowing from the private sector.
3. Surplus of public enterprises.
4. External assistance.
5. Additional taxation.

deal with each of these items very briefly, in view of the detailed cussion in regard to most of them presented in the Appendices.

89. *Net surplus on current account*: The net surplus has been estimat- after allowing for the plan current outlays as required by the gramme of development. The revenue estimates are on the basis of ected 1965-66 rates of taxes. No credit is taken for any fresh taxation ich may be required to be levied during the fourth plan in these res.

90. *Market borrowings*: The subject has been dealt with at length Appendix L and further comments are unnecessary.

91. *Surplus of public enterprizes*: There is general agreement that blic enterprizes should yield adequate profits. There also appears a eral consensus that this rate should not generally be less than 10 per t. The present estimates are based on these assumptions except that en lower rates of returns have been assumed for the Railways and & T. The full details of these calculations have been set out in pendix K. As the surplus of public enterprizes is to play a very portant role in mobilizing resources for the public sector in future, summary statement has been added (Table 19) to give an indication what might be reasonably expected from different types of enter- izes of the public sector in 1970-71 and 1975-76.

TAB

Surplus of public undertakings available for investment 1965-66, 1970

Sl. No.	Undertakings	1965-66		
		Net profits	Depreciation resources	Total resource
(0)	(1)	(2)	(3)	(4)
1	Railways @	840	..	8
2	Posts and Telegraphs @	60	20	
3	Power	210	290	5
4	Road Transport	50	60	1
5	Steel	530	480	1,0
6	Nitrogenous fertilizers	40	70	1
7	Machine Building industries	80	80	1
8	Oil	100	130	2
9	Mining	130	140	2
10	Other industries	110	110	2
11	Total	2,150	1,380	3,5

Note.—Depreciation resources represent depreciation provision estimated on the basis of

@For Railways and Posts & Telegraphs, the return has been taken at 6 per cent for 1965-
formly, taken at 10 per cent.

19

and 1975-76.

(Rs. million)

1970-71			1975-76		
Net profits	Depreciation resources	Total resources	Net profits	Depreciation resources	Total resources
(5)	(6)	(7)	(8)	(9)	(10)
1,680	..	1,680	3,440	..	3,440
130	40	170	290	70	360
360	690	1,050	1,430	1,440	2,870
80	130	210	190	250	440
710	920	1,630	1,720	1,560	3,280
150	190	340	380	280	660
520	250	770	1,310	520	1,830
230	310	540	510	370	880
300	300	600	580	560	1,140
260	270	530	810	600	1,410
4,420	3,100	7,520	10,660	5,650	16,310

life of the plant minus estimated depreciation outlay.

7 per cent for 1970-71 and 8 per cent for 1975-76. For all other enterprises, it has been uni-

92. *External assistance*: It is assumed that reliance on external assistance will be progressively reduced and entirely eliminated by 1975-76. In the estimates made here, external assistance would provide only about 19 per cent of investment in 1965-66, about 7 per cent of the total investment in 1970-71 and nil in 1975-76. This progressive reduction of dependence on external aid, both absolutely and relative to total investment, is consistent with the programmes emphasis on specific quantitative structure of import substituting and export promoting industries.

93. *Gap (or Taxation)*: After taking into account the resources available from net surpluses on current account, borrowings, external assistance, and surplus of public enterprizes (at postulated rates of return), the gap to be covered is Rs. 6,000 million in 1970-71 and Rs. 8,000 million in 1975-76. This gap has to be covered primarily through additional taxation. In other words the taxes to be levied during the next six years should yield in 1970-71 an additional amount of Rs. 6,000 million. Considering that the yield of additional taxes levied during the Third Plan, when the income growth has been quite low, is expected to be nearly Rs. 7,500 million in 1965-66, this tax effort cannot be considered unmanageable.

94. The need for additional taxation could be somewhat reduced if the public enterprizes could be made to yield even larger surpluses than postulated. Indeed, if all of them could earn a rate of return of 10 per cent on investment made 2 years earlier (compared to the 3 or 4 years lag assumed in the present estimates), additional resources of the order of Rs. 1,500 million could probably be raised. This would, however, be too optimistic a view to take at this stage, especially on the basis of record of performance so far. Yet, the effort should be made because ultimately it is through the growing surpluses of efficiently run public enterprizes that future growth of the economy would be sustained.

95. If the economy grows at the rate projected it would be easy to devise direct and indirect taxes to yield the amount necessary to fill the gap. This matter, however, is not discussed further at this stage.

96. If the taxation problem of the fourth plan is successfully tackled, it is interesting to note that the financing of development in the fifth plan becomes automatic, provided again production programmes can be carried through.

97. *Private Sector*: The private sector investment and sources of its finance are briefly indicated in table 20. The corporate savings are based on the assumption that existing rate of return on capital would be maintained and 50 per cent of their net profits would be retained by them. The estimate of personal savings are derived as a difference between the level of personal saving estimated in table 18 and what is expected to be transferred to the public-sector. If the personal savings estimated in table 18 are realized, financing of private sector investment would provide no serious difficulties.

98. It seems premature to delve deeply into the problems of finance in too great a detail at this stage when even the broad framework of the plan has not emerged.

TABLE 20

Financing of Private Sector Investments, India 1960-61, 1965-66, 1970-71 *and* 1975-76.

(Rs. million)

head	1960-61	1965-66	1970-71	1975-76
1	2	3	4	5
Total investment	8,000	11,000	19,500	26,000
financed out of corporate savings . .	900	1,600	3,100	5,000
non-corporate savings	6,800	8,900	15,900	21,000
direct external assistance . .	300	500	500	..

VII

99. The outline of development presented in the paper is the outcome of studies made over the last several months. Several alternative approaches were tried, and different sets of assumptions made. A bigger plan, extending the prospect of rapid increase of incomes and living standards, seemed to come up against serious balance of payments problems and of deficiencies of organization. The uncertanity regarding agriculture was a major deterrent.

100. The Plan outlined here holds out many challenges; it also offers hope. It is difficult and will certainly stretch our resources and organizational capacities to the utmost. A smaller plan will present less problems but will also solve none.

P.P. DIVISION

17 *April* 1964.

APPENDICES

APPENDICES

A. NATIONAL INCOME

A. 0: Adjusted estimates of national income by industrial origin.

A. 1: Estimates of national income by industrial origin.

A. 2: Estimates of value added in organised manufacturing industries.

A. 3: Income from transport including Railways.

A. 4: Income generated by government services.

B. PRODUCTION

B. 1: Estimates of the production of agriculture, animal husbandry, fishery and forestry.

B. 2: Estimates of mineral production.

B. 3: Estimate of capacity, production, value of output and value added in organised manufacturing industries.

B. 4: Gross output of transport equipment, electrical and non-electrical machinery and equipment.

C. MATERIAL BALANCES

(1) coal; (2) petroleum products; (3) electricity; (4) iron ore; (5) manganese ore; (6) limestone; (7) china clay; (8) gypsum; (9) bauxite; (10) chromite, (11) salt; (12) asbestos; (13) cement; (14) sulphuric acid; (15) caustic soda; (16) soda-ash; (17) chlorine; (18) calcium carbide; (19) industrial gases; (20) sulphur; (21) phosphorus; (22) rubber; (23) benzene; (24) naphthalene; (25) methanol; (26) phthalic anhydride; (27) formal dehyde; (28) carbon-black; (29) chemical pulp; (30) steel; (31) aluminium; (32) copper; (33) lead; (34) machinery; (35) refractories.

D. TRANSPORT

D. 1: Estimates of volume of traffic carried by railways and other transport.

D. 2: Volume of goods traffic.

D. 3: Distribution of goods traffic between different means of traffic.

D. 4. Average lead of traffic on railways and volume of rail traffic.

D. 5: Rolling stock in service.

D. 6: Rolling stock requirements during fourth and fifth plan periods.

E. EXPORTS

E. 1: Export prospects.
E. 2: Indices of growth of Indian Exports.
E. 3: Structure of Indian Exports.

F. IMPORTS

F. 1: Import requirements.

G. INVISIBLES

G. 1: Estimates of Receipts and payments under invisibles.

H. ALTERNATIVE CONSISTENCY MODELS OF FOURTH PLAN BASED ON 30 SECTOR INTER INDUSTRY MATRIX.

J. K. L. M. FINANCE AND INVESTMENT

J. : Net surplus on current account of Centre and State Governments.
J. 1: Estimates of revenue receipts of the Centre and the States.
J. 2: Estimated revenue from union excise duties at 1960-61 rates.
J. 3: Estimates of revenue expenditure of the Centre and the States.
K. : The estimation of surpluses of public enterprises.
L. : Absorption of Private Savings by the public sector.
M. : Estimate of total outlay, investment and its distribution between the public and private sectors during the fourth plan.

N. HEALTH

N. 1: Organisation of medical care and health programmes in the public sector.

TABLE A.O: ADJUSTED ESTIMATES OF NATIONAL INCOME BY INDUSTRIA

	Industrial Sectors	National Income (Rs. million)			
		1960-61	1965-66	1970-71	1975-7
	(1)	(2)	(3)	(4)	(5)
1	Agriculture including animal husbandry, fishery & forestry	68,850	76,815	98,450	1,21,490
2	Small enterprises	8,190	9,990	15,210	22,340
3	Mining	1,630	2,600	4,520	6,950
4	Factory establishments, including power	13,200	22,290	42,630	71,150
5	Sub-total (2 to 4)	23,020	34,880	62,360	1,00,440
6	Construction	3,010	5,400	10,320	15,230
7	Communication	630	910	1,420	2,385
8	Transport including railways	5,520	7,910	13,110	20,600
9	Organised banking and insurance	1,610	2,515	4,130	7,185
10	Other commerce	15,710	18,950	27,020	37,960
11	Professions, liberal arts and domestic services	9,350	11,700	16,920	24,560
12	Government services	9,070	14,470	18,850	27,280
13	House property	5,310	6,460	8,910	11,930
14	Unallocated	..	..	..	3,940
15	Grand Total	1,42,080	1,80,010	2,61,490	3,73,000

Source : P.P. Division study : Notes on Perspective of Development, statement A.1, B.2

NOTE : Although rates of production as indicated in statement B. 2 and B. 3 for 1965-66 be less, approximately by half the annual rate of growth. Adjustments have been

ORIGIN, INDIA, 1960-61 To 1975-76

(At 1960-61 Prices)

Percentage to total				Average annual rate of growth percentage				
1960-61	1965-66	1970-71	1975-76	1965-66 over 1960-61	1970-71 over 1965-66	1975-76 over 1970-71	1970-71 over 1960-61	1975-76 over 1960-61
(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
48.5	42.7	37.7	32.6	2.3	5.1	4.3	3.7	3.9
5.8	5.6	5.8	6.0	4.0	8.8	8.0	6.4	6.9
1.1	1.4	1.7	1.8	9.8	11.7	9.0	10.8	10.1
9.3	12.4	16.3	19.1	11.0	13.9	10.8	12.5	11.9
16.2	19.4	23.8	26.9	8.6	12.3	10.0	10.5	10.3
2.1	3.0	4.0	4.1	12.4	13.9	8·1	13.1	11·4
0.4	0.5	0.5	0.6	7.6	9.4	11·0	8.5	9.2
3.9	4.4	5.0	5.5	7.5	10.6	9.5	9.1	9.1
1.1	1.4	1.6	1.9	9.4	10.4	11.7	9.9	10.5
11·1	10·5	10·3	10·2	3·8	7·4	7·0	5·6	6·0
6.6	6.5	6.5	6.6	4.6	7.6	7.7	6.1	6.6
6.4	8.0	7.2	7.3	9.8	5.5	7.6	7.6	7.6
3.7	3.6	3.4	3.2	4.0	6.6	6.0	5.3	5.6
..	..	..	1.1	..	..	..	..	..
100.0	100.0	100.0	100.0	4.8	7.8	7.4	6.3	6·6

and B.3.

and 1970-71 may be reached by the end of the year the whole year production may accordingly made in the expected outputs for items 3, 4 and 7 to 11.

TABLE A. 1: ESTIMATES OF NATIONAL INCOME BY INDUSTRIAL ORIGIN INDIA, 1960-61 TO 1975-76

(At 1960-61 prices

	Industrial sectors	National income (Rs. million)			
		1960-61	1965-66	1970-71	1975-7
	(1)	(2)	(3)	(4)	(5)
1	Agriculture including animal husbandry, fishery and forestry	68,850	76,815	98,450	1,21,490
2	Small enterprises	8,190	9,990	15,210	22,340
3	Mining	1,630	2,730	4,750	6,950
4	Factory establishments	13,200	23,590	45,390	71,150
5	Sub—total	23,020	36,310	65,350	1,00,440
6	Construction	3,010	5,400	10,320	15,230
7	Communication	630	945	1,485	2,38
8	Transport including railways . .	5,520	8,230	13,780	20,600
9	Organised & banking and insurance .	1,610	2,640	4,325	7,18
10	Other commerce	15,710	19,340	28,010	37,960
11	Professions, liberal arts, and domestic services	9,350	12,010	17,580	24,560
12	Government services . . .	9,070	14,470	18,850	27,280
13	House property	5,310	6,460	8,910	11,930
14	Unallocated . .	..	..	..	3,940
15	Grand Total	1,42,080	1,82,620	2,67,060	3,73,000

Source : P.P. Division studies : Notes on Perspective of Development, Statements A. 2—A.4 and B.1—B.3.

BLE A-2 : ESTIMATES OF VALUE ADDED IN ORGANISED MANUFACTURING INDUSTRIES—INDIA 1960-61—1975-76

(Rs. million at 1960-61 prices)

dustry groups	1960-61		1965-66		1970-71		1975-76	
	gross	net	gross	net	gross	net	gross	net
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ndustries covered nder the census ector—								
food products	7,442	12,35	8,654	1,484	11,680	1,964	17,260	2,881
textile products	9,043	2,750	11,282	3,404	16,937	5,087	23,178	7,098
rubber and leather products	838	251	1,919	580	3,630	1,095	6,604	1,991
paper, wood etc. products .	1,625	564	3,429	1,199	6,348	2,196	10,161	3,499
non-metallic mineral products .	1,626	528	3,191	1,047	[6,772	2,227	10,229	3,342
chemical products .	2,002	601	6,273	1,856	14,652	4,261	26,027	7,562
metals and products . .	3,419	881	9,994	2,517	23,096	5,756	39,137	9,781
electrical engineering .	942	301	2,742	883	7,166	2,282	11,138	3,558
electronics .	56	17	130	40	1,200	604	2,140	1,098
transport equipment . .	2,643	879	5,270	1,801	10,228	3,425	1,42,43	4,742
machinery .	984	333	4,318	1,543	11,514	4,192	19,277	7,122
miscellaneous.	222	68	415	128	821	254	1,300	403
total .	30,842	8,408	57,617	16,482	1,14,044	3,33,43	1,80,694	53,077
mple sector industries (gross), [1]	7,461	1,455	13,629	2,990	27,271	6,280	42,378	9,835
preciation (11·5%)	..	167	..	344	..	722	..	1,131
mple sector industries (net) . .	7,461	1,288	13,629	2,646	27,271	5,558	42,378	8,704
ctricity supply—tilities . .	1,286	900	2,655	1,859	5,545	3,882	9,664	6,765
justment for overage . .	..	2,604	..	2,604	..	2,604	..	2,604
rand—Total .	39,589	13,200	73,901	23,591	1,46,860	45,387	2,32,736	71,150

The output of industries covered in this group are those which employ between 10 to 50 rs and use power or employ between 20 to 100 workers and do not use power. The out- f these industries in the subsequent years has been arrived at by dividing these industries same groups as the industries in the census sector and by assuming that they will grow at me rate as the comparable group in the census sector.

TABLE A-3 INCOME FROM TRANSPORT IN INCLUDING RAILWAYS, INDIA
1960-61 1975-76

(Rs. millio

Items	1960-61	1965-66	1970-71	1975-
(1)	(2)	(3)	(4)	(5)
Railways				
1 earnings from goods traffic . . .	2,861	4,640	8,050	11,7
2 earnings from passenger traffic . .	1,316	1,540	2,070	2,5
3 other sundry earnings . . .	391	490	710	8
4 total earnings	4,568	6,670	10,830	15,20
5 income generated through railways[1] .	3,580	5,230	8,490	11,9
Other transport—				
- road transport				
6 earnings from goods traffic . . .	1,650	3,300	7,500	13,7
7 deduct 20%.[2] of above earnings from public enterprises goods traffic taken account of in govt. services	330	660	1,500	2,74
8 net earnings from goods traffic . .	1,320	2,640	6,000	10,9
9 earnings from passenger traffic . .	1,600	2,600	4,150	6,6
10 total	2,920	5,240	10,150	17,6
11 net income through road transport[3] .	1,195	2,150	4,160	7,2
12 air-transport	60	90	150	2
13 non-mechanised transport[4] . .	685	760	980	1,2
14 total other transport . . .	1940	3,000	5,290	8,6
15 total transport including railways .	5,520	8,230	13,780	20,6

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[1] According to CSO, National Income estimates, income generated from Railways is 78 of total earnings. It is assumed that this percentage holds good up to 1975-76.

[2] assumed.

[3] the ratio between the net earnings to gross earnings is 41% worked out on the basis formation obtained from Statistical Bulletin of State Road Transport undertakings in 1959-60. It is assumed to be constant up to 1975-76.

[4] related to growth in Agriculture income.

ABLE A-4: INCOME GENERATED BY GOVERNMENT SERVICES, INDIA 1960-61 1975-76

(Rs. million)

items	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
1 government expenditure . . .	16,720	31,780	44,170	63,000
2 interest on debt	2,030	3,800	6,100	8,600
3 defence capital outlay . . .	230	1,800	2,100	2,400
4 government expenditure net of interest and defence capital outlay . . .	14,460	26,180	35,970	52,000
5 income from government services@ .	9,070	14,920	19,420	28,080
6 deductions due to increase in dearness and other allowances since 1960-61 . .	..	(—)450	(—)570	(—)800
7 net income at 1960-61 prices . . .	9,070	14,470	18,850	27,280

@Ratio of income generated through govt. services to govt. expenditure net of interest and ence capital outlay declined from 62·7% in 1960-61 to 58·8% in 1961-62 and 58·5 percent 2-63. Assuming that this decline will continue in the subsequent years, the share of income m government services in the government revenue expenditure is taken at 57% in 1965-66 and % in 1970-71 and 1975-76.

TABLE B. I: ESTIMATES OF THE PRODUCTION OF AGRICULTURE, ANIM

(value Rs. million

Sl. No.	commodity	price per tonne	unit of physical production	1960-61 quantity	1960-61 value
(0)	(1)	(2)	(3)	(4)	(5)
A.	Agriculture proper				
1	rice	570·35	mill.tonnes	34·2	19,50
2	wheat	425·47	”	11·0	4,67
3	coarse grains	362·10	”	23·1	8,37
4	pluses	401·69	”	12·7	5,08
5	total food grains	..	”	81·0	37,63
6	ground nut	626·83	”	4·4	2,79
7	castor seed	634·75	”	0·1	5
8	sesamum	108·2	”	0·3	34
9	rape seed	854·45	”	1·4	1,19
10	linseed	667·44	”	0·4	26
11	total oilseeds	..	”	6·6	4,62
12	sugarcane (gur)	408·48	”	10·6	4,33
13	cotton	[1]404·73	000,bales	5390·0	2,18
14	jute	[1]170·34	”	3982·0	67
15	tobacco	2811·63	000,tonnes	427·8	1,20
16	tea	2381·65	”	310·0	80
17	coffee	236·6	”	62·2	14
18	potato	277·21	mill.tonnes	2·8	76
19	other fruits & vegetables	..		..	4,07
20	chillies	1989·73	000,tonnes	371·9	74
21	other condiments & spices	..	..	..	89
22	fodder	..	..	..	99
23	straw	63·37	mill.tonnes	125·5	7,88
24	other agricultural products	..	..	..	3,81
25	rice husk and bran	..	..	..	79
26	rubber	3457·06	000,tonnes	25·4	8
27	total other agricultural products	..	..	..	29,39
28	total of A. (reporting area)	..	..	..	71,65
29	non-reporting area	..	..	..	99
30	total gross value of agriculture	..	..	..	72,55
B.	Animal husbandry				
31	milk and milk products	335·40	mill.tonnes	22·4	7,51
32	meat	153·4	000,tonnes	556·0	85
33	eggs	[2]116·30	mill.nos	2048·0	23

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[1] price per bale [2] price per 1000 nos.

HUSBANDRY, FISHERY AND FORESTRY—I DIA 1960-61—1975-76

960-61 prices)

1965-66		1970-71		1975-76	
quantity	value	quantity	value	quantity	value
(6)	(7)	(8)	(9)	(10)	(11)
38·0	21,673	51·6	29,430	63·8	36,388
12·2	5,191	16·5	7,020	20·5	8,722
25·7	9,306	34·8	12,601	43·1	15,607
14·1	5,664	19·1	7,672	23·6	9,480
90·0	41,834	122·0	56,723	151·0	70,197
5·0	3,134	7·9	4,952	11·1	6,958
0·1	63	0·2	127	0·3	190
0·3	347	0·7	757	1·0	1,082
1·6	1,367	1·7	1,453	2·3	1,965
0·5	334	0·7	467	1·0	667
7·5	5,245	11·2	7,756	15·7	10,862
11·0	4,493	13·2	5,392	17·8	7,270
6344·0	2,568	9800 0	3,966	13500·0	5,464
6163·0	1,050	7338·0	1,250	9295·0	1,583
548·0	1,541	674·5	1,896	852·8	2,398
408·2	972	430·9	1,026	494·4	1,178
80·0	189	95·9	227	110·4	260
3·2	887	6·0	1,663	8·0	2,218
..	5,450	..	6,047	..	7,660
424·0	844	567·0	1,128	758·6	1,509
..	1,060	..	1,162	..	1,551
..	1,327	..	1,500	..	1,875
136·1	8,625	189·0	11,977	233·9	14,822
..	4,467	..	4,850	..	5,640
..	878	..	1,192	..	1,474
50·0	173	72·0	249	82·0	284
..	34,524	..	43,525	..	55,186
..	81,603	..	1,080,04	..	1,36,245
..	1,000	..	1,150	..	1,350
..	82,603	..	1,09,154	..	1,37,595
25·4	8,519	42·6	14,288	59·8	20,057
727·0	1,115	900·0	1,380	1015·0	1,557
2680·0	312	3315·0	386	3738·0	435

TABLE B. 1: ESTIMATES OF THE PRODUCTION OF AGRICULTURE, ANIMAL

(value Rs. million

sl. No.	commodity	price per tonne	unit of physical production	1960-61 quantity	1960-61 value
(0)	(1)	(2)	(3)	(4)	(5)
34	wool	4673·79	000,tonnes	36·0	168
35	hides	[3]9·00	mill.nos	20·9	190
36	skins	[4]381·39	„	46·2	176
37	other animal husbandry	..	..	..	2,952
38	total gross value of Animal husbandry	..	..	..	12,090
39	gross total of Agriculture & animal husbandry	..	..	..	84,644
40	value of inputs	..	..	..	19,285
41	net value of agri. & animal husbandry	..	..	..	[6]65,359
	C. Fishery				
42	gross value	645·37	000,tonnes	1546·4	998
43	net value (96·2% of gross)	..	..	..	960
	D. Forestry				
44	gross value	..	..	..	1,186
45	net value (95% of gross)	..	..	..	1,127
46	gross value (A+B+C+D)	..	..	..	86,828
47	net value (A+B+C+D)	..	..	..	67,446
48	adjustment[5]	..	..	..	1,400
49	value added by agriculture	..	..	..	68,846

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[3] price per piece. [4] price per 100 nos.

[5] Rs. 1400 million have been added to the net value to make it comparable with the offici

[6] including Rs. 10 million for hunting

HUSBANDRY, FISHERY AND FORESTRY—INDIA 1960-61—1975-76

1960-61 prices)

1965-66		1970-71		1975-76	
quantity	value	quantity	value	quantity	value
(6)	(7)	(8)	(9)	(10)	(11)
40·8	191	49·9	233	63·7	298
22·0	198	23·1	208	24·3	219
48·7	186	49·0	187	49·3	188
..	3,110	..	3,265	..	3,430
..	13,631	..	19,947	..	26,184
..	96,234	..	1,29,101	..	1,63,779
	23,477		35,445		48,150
..	72,757	..	93,656	..	1,15,629
2020·0	1,304	2628·8	1,696	3650·0	2,355
..	1,254	..	1,632	..	2,266
..	1,480	..	1,850	..	2,310
..	1,405	..	1,760	..	2,195
	99,018	..	1,32,647	..	1,68,444
	75,416	..	97,048	..	1,20,090
	1,400	..	1,400	..	1,400
	76,816	..	98,448	..	1,21,490

estimate. This amount has been repeated in the subsequent years.

TABLE B. 2: ESTIMATES OF MINERAL PRODUCTION,

(quantity in

sl. no.	minerals	price per tonne	1960-61 quantity	1960-61 value
(0)	(1)	(2)	(3)	(4)
1	coal	20·7	52593	1088
2	iron ore	8·5	10683	90
3	manganese ore	69·0	1199	83
4	salt	19·5	3950	67
5	limestone	4·4	15993	56
6	copper ore	52·9	448	24
7	chromite	57·0	100	6
8	china clay	13·9	353	5
9	bauxite	10·6	387	4
10	gypsum	6·3	997	6
11	gold (in kg)	11·4	4995	57
12	mica	851·7	29	25
13	dolomite	9·2	650	6
14	ilmenite	58·8	250	15
15	crude oil	60·0	449	27
16	others			256
17	total (gross)			1815
18	net value added.			1630

source : P. P. Division studies

1/ price per gram

2/ value added is taken as 90% of gross output for all minerals in 1960-61, following CS

INDIA 1960-61—1975-76

'000 tonnes and value in Rs. million at 1960-61 prices)

1965-66		1970-71		1975-76	
quantity	value	quantity	value	quantity	value
(5)	(6)	(7)	(8)	(9)	(10)
89000	1842	140000	2897	210000	4347
27000	228	60000	510	90000	765
2100	145	3000	207	3900	270
5200	102	7300	143	10500	205
27500	121	52000	229	82000	360
990	52	4900	259	8000	423
90	5	190	11	270	16
700	10	1250	17	1900	26
920	10	2500	26	4000	42
1100	7	2100	13	3250	21
5000	57	5000	57	5000	57
32	27	42	36	50	43
1200	11	3600	33	7000	65
365	21	400	24	450	26
6000	360	12000	720	15000	900
	413		759		1124
	3411		5941		8690
	2730		4750		6950

procedure and 80% of gross output for subsequent years.

TABLE B.3: ESTIMATE OF CAPACITY PRODUCTION, VALUE OF OUTPUT,

(value at

Industry	Unit	Capacity				Production			
		1960-61	1965-66	1970-71	1975-76	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
FOOD PRODUCTS									
1. Sugar	th. tonnes.	2300	3570	5500	8500	3060	3570	5000	8300
2. Tea	th. tonnes	n.a.	460	500	600	317	390	470	570
3. Salt	th. tonnes	3900	6600	9000	12000	3500	6200	8000	10000
4. Cigarettes, Cigars	bil. nos.	44·3	50	60	90	40·4	45	55	80
5. Others		..	..	..	..	..	..	..	..
TEXTILE PRODUCTS :									
6. Cotton fabrics (mill made)	mil. metres	n.a.	5600	7100	10000	4616	5075	6400	9500
7. Cotton yarn for sale	th. tonnes	n.a.	n.a.	n.a.	n.a.	253	355	690	950
8. Wollen fabrics	mil. metres	44	44	73	140	13	32	55	130
9. Jute manufactures	th. tonnes.	1224	1224	1600	2000	1042	1326	1600	1900
10. Others			..	..	..			..	..
RUBBER & LEATHER PRODUCTS :									
11. Auto tyres	th. nos.	1610	4600	8200	15000	1490	3800	7000	13000
12. Auto tubes	th. nos.	1660	3700	6100	15000	1350	3000	5000	13000
13. Cycle tyres	mil. nos.	15·1	20	45	60	11·2	18	40	50
14. Cycle tubes	mil. nos.	16·7	20	45	60	13·3	18	40	50
15. Dipped rubber goods & contraceptives of which		..	..	..	..	..	..	..	..
rubber contraceptives			..	..	..	..	..	..	..
16. Others		..	..	..	..	..	..	..	..
PAPER, WOOD etc. PRODUTS									
17 paper & paper board	th. tonnes	410	770	1500	2500	347	670	1200	2000
18 newsprint	th. tonnes	30	30	330	500	23	28	300	450
19 plywood	mil. sq. metres	13	16	45	90	15	21	50	90
20 matches	mil. boxes	6523	6523	7490	10000	5400	6048	7200	9200
21 rayon filament	th. tonnes	24	70	100	140	22	70	100	140
22 staple fibre	th. tonnes	22	30	90	160	21	30	90	160
23 chemical pulp rayon grade	th. tonnes	..	120	250	400	..	100	200	360
24 others									
NON-METALLIC PRODUCTS									
25 cement	th. tonnes	9000	14000	26000	40000	8000	12000	23000	36000
26 glass	th. tonnes	390	500	1000	1050	229	405	770	1000
27 petroleum products	th. tonnes	6100	17000	30000	45000	5800	13000	27000	42000
28 lubricating oils	th. tonnes	..	100	800	1300	..	100	800	1200
29 refractories	th. tonnes	830	1430	2400	3500	560	1120	2000	3000
30 cement asbestos	th. tonnes	217	400	530	650	217	340	450	600
31 others									

AND VALUE ADDED IN ORGANISED INDUSTRIES, INDIA 1960-61-1975-76

(1960-61 prices)

Unit	price per unit (Rs.)	Value of production (Rs. million)				va/v	Value added (Rs. million)			
		1960-61	1965-66	1970-71	1975-76		1960-61	1965-66	1970-71	1975-76
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
M		**7442**	**8654**	**11680**	**17260**	—	**1235**	**1484**	**1964**	**2881**
tonne . . .	767	2347	2738	3835	6366	21	493	575	805	1337
tonne . . .	4790	1518	1868	2251	2730	24	364	448	540	655
tonne	16	56	99	128	160	65	36	64	83	104
th. nos	12	485	540	660	960	23	112	124	152	221
		3036	3409	4806	7044	8	230	273	384	564
		9043	**11282**	**16937**	**23178**		**2750**	**3404**	**5087**	7098
metre . . .	0 94	4339	4771	6016	8930	34	1475	1622	2045	3036
tonne . . .	5890	1490	2091	4064	5596	34	507	711	1382	1903
metre . . .	15·6	203	499	858	2028	30	61	150	257	608
tonne . . .	1414	1473	1875	2262	2687	24	354	450	543	645
		1538	2046	3737	3937	23	353	471	860	906
		838	**1919**	**3630**	**6604**		**251**	**580**	**1095**	**1991**
Lo	190	283	722	1330	2470	36	102	260	479	889
no. .	18·7	25	56	94	243	36	9	20	34	87
no. .	3·5	39	63	140	175	36	14	23	50	63
no.	1·5	20	27	60	75	36	7	10	22	27
..	..	47	80	170	300	30	14	24	51	907
..	..	neg.	25	100	200					
..	..	424	971	1836	3341	25	105	243	459	835
		1626	3429	*6348*	*10161*		*664*	*1199*	*2196*	*3499*
tonne . .	1500	521	1005	1800	3000	28	146	281	504	840
tonne . . .	900	21	25	270	405	28	6	7	76	113
sq. metre . . .	4·2	63	88	210	378	33	21	29	69	125
th. boxes. . . .	20	108	121	144	184	44	48	53	63	81
tonne . . .	9200	202	644	920	1288	39	79	251	359	502
tonne . . .	3725	78	112	335	596	39	30	44	131	232
tonne . .	1000	..	100	200	360	40	..	40	80	144
		632	1334	2469	3950	37	234	494	914	1462
	–	*1626*	*3191*	*6772*	*10229*		*528*	*1047*	*2227*	*3348*
tonne .	58	464	696	1334	2088	25	116	174	334	522
tonne . .	550	126	230*	-434*	550	38	48	87	165	209
tonne . . .	120	696	1560	3240	5040	32	223	499	1037	1613
tonne . . .	600	..	60	480	720	32	..	19	154	230
tonne . . .	150	84	168	300	450	41	34	69	123	185
tonne . . .	300	65	102	135	180	37	24	38	50	67
		191	375	789	1201	43	83	161	339	516

*Includes the value of opthalmic glass

TABLE

Industry	Unit	Capacity				Production			
		1960-61	1965-66	1970-71	1975-76	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CHEMICAL AND CHEMICAL PRODUCTS									
32 fertilizers—nitrogenous .	th. tonnes]	161	640	2000	3500	99	500	1750	3000
33 fertilizers—phosphate .	th. tonnes]	58	270	1250	2000	54	200	750	1700
CHEMICAL AND CHEMICAL PRODUCTS (*Contd.*]									
34 sulphuric acid . .	th. tonnes	550	1500	3500	6000	360	1200	3000	6000
35 nitric acid . . .	th. tonnes	7	50	160	200	5	45	140	180
36 caustic soda (chem. & electrolytic) . . .	th. tonnes	127	360	760	1150	99	300	600	1000
37 soda ash . . .	th. tonnes	270	360	720	1100	147	340	700	1000
38 chlorine . . .	th. tonnes	80	230	460	750	55	170	350	600
39 calcium carbide . .	th. tonnes	24	58	85	85	10	55	80	80
40 titanium dioxide .	th. tonnes	4	30	45	60	3	20	35	50
41 sodium hydrosulphite .	th. tonnes	2	12	16	24	2	10	13	.2
42 oxygen. . . .	mil. cu. metre	29	52	110	200	23	50	95	175
43 acetylene . . .	mil. cu. metre	4	10	16	25	3	6	11	20
44 alcohol. . . .	th. tonnes	150	240	290	320	78	200	260	290
45 benzene . . .	th. tonnes	16	40	160	300	13	32	128	280
46 acetic acid . .	th. tonnes	3	25	45	90	2	20	36	80
47 methanol . . .	th. tonnes	..	30	90	120	..	24	72	100
48 phthalic anhydride	th. tonnes	..	12	27	50	..	10	26	48
49 carbon black . .	th. tonnes	..	32	70	140	..	25	60	130
50 caprolactum . . .	th. tonnes	..	5	30	45	..	4	24	36
51 formaldehyde . .	th. tonnes	..	13	70	120	..	10	65	100
52 di-methy terephthalate .	th. tonnes	..	..	20	40	..	..	16	35
53 styrene monomer . .	th. tonnes	..	33	60	90	..	26	48	75
54 butadiene isoprene .	th. tonnes	..	..	100	160	..	..	80	150
55 plasticizers . . .	th. tonnes	1	9	26	40	1	7	21	36
56 rubber chemicals . .	th. tonnes	2	4	7	15	2	3	6	12
57 other organic chemicals and intermediates . .	th. tonnes	32	175	395	900	26	140	316	800
58 pesticides fungicides & weedicides . . .	th. tonnes	3	15	40	70	2	12	32	60
59 dyestuffs . . .	th. tonnes	8	12	16	22	5	10	13	20
60 drugs and pharmaceuticals	Rs. million	600	1750	3000	4000	600	1750	3000	4000
61 plastics (PVC, polythene)	th. tonnes	16	90	350	600	10	75	270	550
62 synthetic fibres .	th. tonnes	..	4	90	150	..	4	60	150
63 synthetic rubber . .	th. tonnes	..	30	120	300	..	30	100	300
64 paints and varnishes .	tb. tonnes	80	160	300	450	53	150	270	400
65 soap	th. tonnes	254	254	360	540	142	220	320	520
66 naptha cracking units (ethylene, propylene, xylene)	th. tonnes	..	285	1000	1600	..	250	700	1600

B. 3 (contd.)

price per unit		value of production (Rs. million)				va/v	value added (Rs. million)			
unit	(Rs.)	1960-61	1965-66	1970-71	1975-76		1960-61	1965-66	1970-71	1975-76
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
		2002	*6273*	*14652*	*26027*		*601*	*1856*	*4261*	*7562*
tonne	1200	119	600	2100	3600	22	26	132	462	792
tonne	1140	62	228	855	1938	22	14	50	188	426
tonne	150	54	180	450	900	33	18	59	149	297
tonne	1400	7	63	196	252	32	2	20	63	81
tonne	690	68	207	414	690	33	22	68	137	228
tonne	375	55	128	263	375	33	18	42	87	124
tonne	440	24	75	154	264	32	8	24	49	84
tonne	800	8	44	64	64	40	3	18	26	26
tonne	2800	8	56	98	140	32	3	18	31	45
tonne	4650	9	47	60	102	29	3	14	17	30
th. cu. metre	1200	28	60	115	210	29	8	17	33	61
th. cu. metre	2000	6	12	22	40	29	2	3	6	12
tonne	250	20	50	65	72	29	6	15	19	21
tonne	500	7	16	64	140	29	2	5	19	41
tonne	2000	4	40	72	160	29	1	12	21	46
tonne	600	..	14	43	60	29	..	4	12	17
tonne	2000	..	20	52	96	29	..	6	15	28
tonne	1200	..	30	72	156	29	..	9	21	45
tonne	6500	..	26	156	234	29	..	8	45	68
tonne	1280	..	13	83	128	29	..	4	24	37
tonne	4000	..	..	64	140	29	..	..	19	41
tonne	1500	..	39	72	113	29	..	11	20	33
tonne	1000	..	..	80	150	29	..	..	23	44
tonne	3000	3	21	63	108	29	1	6	18	31
tonne	10000	20	30	60	120	[29	6	9	17	35
tonne	1800	47	252	569	1440	29	14	73	165	418
tonne	4000	8	48	128	240	29	2	14	37	70
tonne	26000	130	260	338	520	35	46	91	118	182
..	..	600	1750	3000	4000	33	198	578	990	1320
tonne	3000	30	225	810	1650	29	9	65	235	478
tonne	12000	..	48	720	1800	39	..	19	281	702
tonne	3000	..	90	300	900	33	..	30	99	297
tonne	2750	146	413	743	1100	26	38	107	193	286
tonne	2200	312	484	704	1144	29	90	140	204	332]
tonne	500	..	125	350	800	32	..	[40	112	256]

TABLE

industry	unit	capacity				production			
		1960—61	1965—66	1970—71	1975—76	1960—61	1965—66	1970—71	1975—76
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CHEMICAL AND CHEMICAL PRODUCTS (*Contd.*)									
67 cosmetics . . .	Rs. million	n.a.	n.a.	n.a.	400	90	150	2500	400
68 others									
METAL & PRIMARY PRODUCTS									
69 steel ingots . . .	th. tonnes	6000	9200	22000	31000	3300	7800	17500	29000
70 finished steel mild including electrical steel sheets .	th. tonnes	4590	6500	13500	23000	2450	5800	11500	21500
71 steel casting and forgings	th. tonnes	83·6	300	1200	1500	70·4	300	900	1100
72 steel pipes and tubes .	th. tonnes	365	518	1200	1700	112	457	1000	1600
73 pig iron . . .	th. tonnes	6400	9000	20000	33500	4000	7600	18000	32000
74 pig iron for sale . .	th. tonnes	1120	1220	4000	6500	1120	1220	3500	6000
75 grey iron castings . .	th. tonnes	..	1000	2500	3800	..	800	2100	3300
76 cast iron pipes . .	th. tonnes	275	609	1400	2200	213	558	1200	1800
77 aluminium (ingots) .	th. tonnes	19	69	280	400	19	68	0	360
78 copper (ingots) . .	th. tonnes	9	36	70	100	9	36	70	100
79 lead (ingots) . .	th. tonnes	6 1	9·2	25	50	3 8	9 2	25	50
80 zinc (ingots) . .	th. tonnes	...	18·4	60	100	..	18·4	60	100
81 non-ferrous alloys . .	th. tonnes	n.a.	n.a.	n.a.	65	21·5	30	45	65
82 aluminium sheets . .	th. tonnes	22·8	100	190	300	26·8	100	190	300
83 brass, copper sheets and circles	th. tonnes	n.a.	56	90	130	51	56	90	130
84 zinc sheets etc. . .	th. tonnes	5·9	7	20	30	3·5	7	20	30
85 ferromanganese . .	th. tonnes	161	224	400	550	91	204	350	500
86 ferro-silicon . . .	th. tonnes	7·1	41	60	100	7·1	41	60	200
87 alloy and special steel—finished . .	th. tonnes	..	51	500	1200	..	51	500	1100
88 steel structural fabrication	th. tonnes	508	1100	2200	3500	229	1016	1980	3000
89 hurricane lanterns .	mil. nos.	n.a.	n.a.	n.a.	10	5·3	7·5	8	10
90 rczor blades . .	mil. nos.	n.a.	n.a.	n.a.	2000	602	700	1000	000
91 steel furniture . .	th. tonnes	n.a.	n.a.	n.a.	150	26	50	80	120
92 utensils . . .	th. tonnes	n.a.	n.a.	n.a.	40	10	15	22	35
93 others . . .	..	..	..	..	..	..	..	..	..
ELECTRICAL ENGINEERING .									
94 turbo-generators —steam . . .	th. kw.	..	1000	2600	3600	..	350	2100	3000
—hydro . . .	th. kw.	..	850	1700	1900	..	250	1250	1500
95 electrical transformers upto 33 kv . . .	mil. kva.	1·4	4	8·5	15	1·4	3·5	7·5	12
above 33 kv. . .	mil. kva. .	..	3	16·5	22	..	3·4	13	18
96 electric motors									
—below 150 kw. . .	th. kw.	840	2240	8000	12000	540	1865	6000	10000
—above 150 kw. . .	th. kw.	..	250	2000	3000	..	200	1500	2500

B. 3 (contd.)

price per unit		value o production (Rs. millions)				va/v	value added (Rs. million)			
unit	(Rs.)	1960—61	1965—66	1970—71	1975—76		1960—61	1965—66	1970—71	1975—76
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
..	..	90	150	250	400	34	31	51	85	136
		137	429	1003	1781	22	30	94	220	392
		3419	*9994*	*23096*	39137	..	*881*	*2517*	*5756*	*978*[illegible]
tonne	550	1348	3190	6325	1182[illegible]	27	364	861	1708	3193
tonne	1475	104	443	1327	1622	22	23	97	292	357
tonne	1180	132	539	1180	1888	19	25	102	224	359
tonne	160	179	195	560	960	27	48	53	151	259
tonne	985	..	788	2069	3250	22	..	173	455	715
tonne	550	117	307	660	990	34	40	104	224	337
tonne	3000	57	204	720	1080	23	13	47	166	248
tonne	2825	25	102	198	283	23	6	23	46	65
tonne	1180	4	11	30	59	23	1	3	7	14
tonne	1300	..	24	78	130	23	..	6	18	30
tonne	4000	86	120	180	260	23	20	28	41	60
tonne	4500	121	450	855	1350	20	24	90	171	270
tonne	3900	199	218	351	507	25	50	55	88	127
onne	1970	7	14	39	59	25	2	4	10	15
onne	840	76	171	294	420	26	20	44	76	1[illegible]9
onne	940	7	39	56	94	26	2	10	15	24
onne	3500	..	179	1750	3850	27	..	48	473	1040
onne	985	226	1001	1950	2955	35	79	350	683	1034
o.	3	16	23	24	30	31	5	7	7	9
h. nos.	15	9	11	15	30	30	3	3	5	9
tonne	1100	29	55	88	132	42	12	23	37	55
tonne	4920	49	74	108	172	50	25	37	54	86
		628	1836	4239	7191	19	119	349	805	1366
		942	**2742**	**7166**	**11138**		**301**	**883**	**2282**	**3558**
kw.	120	..	42	252	360	30	..	13	76	108
kw.	100	..	25	125	150	30	..	8	38	45
kva.	50	70	175	375	600	30	21	53	113	180
kva	22	..	75	286	396	30	..	23	86	119
kw.	125	68	233	750	1250	30	20	70	225	375
w.	125	..	25	188	313	30	..	8	56	94

TABLE

industry	unit	capacity 1960-61	capacity 1965-66	capacity 1970-71	capacity 1975-76	Production 1960-61	Production 1965-66	Production 1970-71	Production 1975-7
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
97 control gears & switch-gears	Rs. million	40	180	600	900	40	150	600	800
98 house service meters	th. nos.	760	2050	2500	3000	510	2030	2500	3000
99 VIR and PVC cables	mil. metres	420	700	1400	2500	195	550	1400	2000
100 ACSR conductors	th. tonnes	19·3	68	125	180	23·6	55	100	130
101 winding wires	th. tonnes	6·8	15	60	100	4·6	12	55	80
102 paper insulated cables	kilometres	1420	8046	16000	25000	992	7200	14000	20000
103 dry core cables	kilometres	758	4000	8000	10000	1733	3200	7000	9000
104 coaxial cables	kilometres	480	480	650	900	91·7	480	600	800
105 arc welding electrodes	mil. metres	128	329	600	1000	110	274	550	800
106 air conditioners	th. nos.	20·5	50	100	150	10·7	40	80	130
107 water coolers	th. nos.	3·9	5·3	30	50	2·2	5	30	50
108 refrigerators	th. nos.	13·6	32·8	120	300	11·4	30	100	250
109 electric fans	th. nos.	1740	2800	4000	6000	1060	2500	4000	5500
110 dry batteries	mil. nos.	225	330	650	1000	214	325	550	900
111 storage batteries	th. nos.	379	800	2000	3200	521	750	1600	3000
112 electric lamps (including miniature lamps)	mil. nos.	43	131	225	600	42	118	200	500
113 flourescent tubes	mil. nos.	1·2	7	30	150	1·7	6	27	120
114 others									
ELECTRONICS									
115 raw materials & components of which	Rs. million	..	n.a.	n.a.	600	..	n.a.	300	55
(i) tubes & transistors	Rs. million	..	n.a.	n.a.	250	..	n.a.	120	22
(ii) resistors, capacitors switches & relays	Rs. million	..	n.a.	n.a.	150	..	n.a.	80	13
116 electronic measuring and testing instruments	Rs. million	..	n.a.	n.a.	125	..	n.a.	50	10
117 transmitters, industrial heating, railway signalling and other industrial equipment	Rs. million	..	n.a.	n.a.	500	..	n.a.	250	4
118 (i) radio receivers	th. nos.	280	700	2500	4500	280	650	2500	40
(ii) Public address system and other consumer items	Rs. million	..	n.a.	n.a.	500	..	n.a.	200	4
TRANSPORT EQUIPMENT									
119 passenger coaches	nos.	1250	1900	2200	2500	1300	1900	2000	22
120 wagons	th. nos.	26	40	60	70	12	40	55	
121 steam locomotives	nos.	300	250	..	..	272	200	..	
122 diesel locomotives	nos.	..	70	350	350	..	70	300	
123 electric locomotives	nos.	..	70	200	325	..	70	150	
124 commercial vehicles	th. nos.	28	54	150	200	28	54	125	
125 cars & jeeps	th. nos.	26	40	65	100	27	35	60	
126 motor cycles and scooters	th. nos.	23	55	150	225	18	50	120	
127 automobile ancillaries	Rs. million	n.a.	n.a.	500	900	90	290	400	

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*Estimated at Rs. 160/- for 1970-71 and 1975-76.

3 (Contd.)

price per unit unit	(Rs.)	value of production (Rs. million) 1960-61	1965-66	1970-71	1975-76	vc/v	value added (Rs. million) 1960-61	1965-66	1970-71	1975-76
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
..	..	40	150	600	800	40	16	60	240	320
	41	21	83	103	123	70	115	58	72	86
metres]	620	121	341	868	1240	24	29	82	208	298
ne	3570	84	196	357	464	10	8	20	36	46
ne	7675	35	92	422	614	24	8	22	101	147
metre	19000	19	137	266	380	24	5	33	64	91
metre	6250	11	20	44	56	24	3	5	11	13
metre	12500	1	6	8	10	24	neg.	1	2	2
metre	200	22	55	110	160	40	9	22	44	64
	2400	26	96	192	312	42	11	40	81	131
	2190	5	11	66	110	42	2	5	28	46
	1610	18	48	161	402	42	8	20	68	169
	108	114	270	432	594	34	39	92	147	202
nos.	370	79	120	204	333	34	27	41	69	113
	88	46	66	141	264	42	19	28	59	111
nos.	530	22	63	106	265	33	7	21	35	87
nos.	2780	4	17	75	334	25	1	4	19	84
		136	396	1035	1608	39	53	154	404	627
		56	130	1200	2140		17	40	604	1098
	..	..	n.a.	300	550	60	..	..	180	330
	..	..	n.a.	120	220					
	..	..	n.a.	80	130					
	..	..	n.a.	50	100	60	..	..	30	60
	..	..	n.a.	250	450	60	..	..	150	270
	200	56	130	400	640	31	17	40	124	198
	..	..	n.a.	200	400	60	..	..	120	240
	..	2643	5270	10228	14243	..	879	1801	3425	4742
	130000	169	247	260	286	40	68	99	104	114
	17000	204	680	935	1020	40	82	272	374	408
	415000]	113	83	..	..	48	54	40	..	..
	1450000	..	102	435	471	48	..	49	209	226
	1050000	..	74	158	315	48	..	36	76	151
	25000	700	1350	3125	4375	24	168	324	750	1050
	10000	270	350	600	1000	24	65	84	144	240
	1700	31	85	204	340	28	9	24	57	95
	..	90	200	400	700	40	36	80	160	280

industry	unit	capacity 1960-61	capacity 1965-66	capacity 1970-71	capacity 1975-76	production 1960-61	production 1965-66	production 1970-71
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TRANSPORT EQUIPMENT —(Contd.)								
128 bicycles complete	th. nos.	1120	2200	3500	4500	1050	1600	3300
129 bicycle parts	Rs. million	n.a.	n.a.	n.a.	n.a.	54	75	150
130 ship building	th. GRT	30	60	120	250	6·7	50	100
131 others	..	..	..	..	..	..	**	**
MACHINERY								
132 coal & other mining machinery	th. tonnes	..	45	75	100	..	15	65
133 cotton textile machinery	Rs. million	120	220	500	600	104	200	400
134 jute textile machinery	Rs. million	25	35	35	45	17	27	35
135 sugar machinery	Rs. million	100	120	250	300	42	120	200
136 cement machinery	Rs. million	10	80	160	300	6	45	150
137 paper machinery	Rs. million	40	80	250	400	neg.	70	160
138 printing machinery	Rs. million	8	30	100	200	..	5	80
139 equipment for chemical industry	Rs. million	20	90	450	1000	15	80	360
140 heavy plate & vessel works	th. tonnes	..	30	70	150	..	23	60
141 metallurgical and other heavy equipment	th. tonnes	..	80	160	240	..	60	140
142 dairy machinery	Rs. million	3	25	50	100	2	25	50
143 tea processing machinery	Rs. million	n.a.	25	50	60	12	23	45
144 building & road construction machinery	Rs. million	25	60	90	160	15	40	75
145 power boilers	ton. st/hr.	..	2500	10000	16000	..	2000	8000
146 industrial boilers	Rs. million	n.a.	150	300	500	5	100	250
147 tractors	th. nos.	..	14·5	60	200	..	10	50
148 diesel engines	th. nos.	48	72	140	150	43	66	110
149 power driven pumps	th. nos.	128	180	300	400	105	150	250
150 air compressors	Rs. million	25	75	200	300	15	60	160
151 machine tools	Rs. million	80	300	1000	1800	72	250	1000
152 road rollers	nos.	440	1100	1500	2200	388	900	1200
153 crawler tractors	nos.	n.a.	600	1200	1600	..	500	1000
154 shovels	nos.	..	100	250	400	..	100	200
155 dumpers and scrapers	nos.	..	600	1200	1600	..	500	1000
156 grinding wheels	th. tonnes	2·9	5·5	12	25	2	4·5	10
157 precision instruments	Rs. million	35	200	700	1200	30	180	550
158 ball and roller bearings	mil. nos.	2	12	50	80	3·2	15	40
159 surgical instruments and x-ray equipments	Rs. million	n.a.	n.a.	120	250	2	50	100
160 bolts, nuts and rivets	th. tonnes	n.a.	n.a.	n.a.	200	43	70	120
161 cranes	th. tonnes	8	60	220	180	2	30	100

**Estimated at Rs. 5000/- for 1970-71 and 1975-76.

3 (contd.)

price per unit		value of production (Rs. million)				va/v	value added (Rs. milliod)			
unit	(Rs.)	1960-61	1965-66	1970-71	1975-		1960-61	1965-66	1970-71	1975-76
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
e.	137	144	219	452	548	28	40	61	127	153
..	..	54	75	150	180	50	27	38	75	90
RT.	2000	13	100	200	400	46	6	46	92	184
..	..	855	1705	3309	4608	38	324	648	1257	1751
..	..	984	4318	11514	19277	..	333	1543	4192	7122
nne	4400	..	66	286	396	44	..	29	126	174
..	..	104	200	400	500	35	36	70	140	175
..	..	17	27	35	40	34	6	9	12	14
..	..	42	120	200	250	30	13	36	60	75
..	..	6	45	150	250	40	2	18	60	100
..	..	neg	70	160	350	45	..	32	72	158
..	..	..	5	80	180	40	..	2	32	72
..	..	15	80	360	800	42	6	34	151	336
nne	3000	..	69	180	360	40	..	28	72	144
nne	6000	..	360	840	1200	40	..	144	336	480
	..	2	25	50	90	40	1	10	20	36
	..	12	23	45	60	31	4	7	14	19
	..	15	40	75	150	20	3	8	15	30
. st/hr.	62500	..	125	500	875	40	..	50	200	350
	..	5	100	250	400	40	2	40	100	160
	7000**	..	70	250	750	61	..	43	153	458
	2050	88	135	226	8287	40	35	54	90	115
	250	26	38	63	08	35	9	13	22	31
	..	15	60	160	250	29	4	17	46	73
	..	72	250	1000	160	41	30	103	410	656
	40000	16	36	48	80	20	3	7	10	16
	100000	..	50	100	130	61	..	31	61	79
	100000	..	10	20	30	20	..	2	4	6
	100000	..	50	100	130	20	..	10	20	26
	5950	12	27	60	119	40	5	11	24	48
	..	30	180	550	1000	46	14	83	253	460
	5·6	18	84	224	392	25	5	21	56	98
	..	2	50	100	250	40	1	20	40	100
	1970	85	138	236	355	27	23	37	64	96
	3900	8	117	390	585	34	3	40	133	199

TAB

industry	unit	capacity				production		
		1960-61	1965-66	1970-71	1975-76	1960-61	1965-66	1970-71
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
MACHINERY—(*Contd.*)								
162 typewriters . .	th. nos.	45	68	120	200	23·5	68	120
163 sewing machines .	th. nos.	267	600	1200	2000	297	600	1100
164 watches, clocks and time pieces . . .	th. nos.	126	2500	3500	7000	51	2080	3500
165 Others . . .	..	..	..	..	..	..	..	..
Miscellaneous . .	Rs. million	..	..	..	..	..	..	..
Total—Industry . .	..	..	..	..	..	..	..	..
Electricity sold[1] . .	mil. kwh.	5·7[2]	12·5[2]	23·6[2]	38·4[2]	16134	35160	73440

Notes:—The ratios of net value to value of output and price per unit have, as far as possible, been taken "Annual Survey of Industries 1960". In respect of industries for which price data was not in the Annual Survey, it was either taken from "Ann al Report or from published data for other tries.

[1].— The figures of production represent the actual amount of electricity sold. They are net of losses self generation.

[2].— In million kw.

B . 3 (contd.)

price per unit		value of production (Rs. million)					value added (Rs. million)			
unit	(Rs.)	1960-61	1965-66	1970-71	1975-76		1960-61	1965-66	1970-71	1975-76
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
no.	760	18	52	91	152	34	6	18	31	52
no.	120	36	72	132	216	46	17	33	61	99
no.	60	3	65	210	360	39	1	25	82	140
..	..	337	1479	3943	6602	31	104	458	1222	2047
..	..	222	415	821	1300	31	68	128	254	403
..	..	30842	57617	114044	180694	..	8404	16482	33343	53077
ch. kwh	75·5	1286	2655	5545	9664	70	900	1859	3882	6765

TABLE B. 4 : GROSS OUTPUT OF TRANSPORT EQUIPMENT, ELECTRICAL AND

(value in Rs. million)

sl. no.	industries	item classification	price per unit		unit of production	1960-61		1965-66	
			unit	value (Rs.)		prod.	value	prod.	valu
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	TRANSPORT EQUIPMENT								
1	steam locomotives . .	K	no.	415000	nos.	272	113	250	104
2	diesel locomotives . .	K	no.	1450000	nos.	..	..	70	102
3	electric locomotives .	K	no.	1050000	nos.	..	..	70	74
4	wagons	K	no.	17000	th. nos.	12	204	40	680
5	passenger coaches . .	K	no.	130000	nos.	1300	169	1900	247
6	commercial vehicles .	K	no.	25000	th. nos.	28	700	54	1350
7	ship building . .	K	GRT	2000	th. GRT	6·7	13	50	100
8	aircrafts complete and components . . .	K	..	..	Rs. million	..	..	..	..
9	sub-total . . .	K	..	..	..	..	1199	..	2657
10	automobile ancillary comp. & parts inc. foundry forge	I	..	..	Rs. million	90	90	200	200
11	marine diesel engines .	I	HP	500	th. HP	..	..	60	30
12	sub-total	I	..	..	..	..	90	..	230
13	cars and jeeps . .	C	no.	10000	th. nos.	27	270	35	350
14	motor cycles and scooters .	C	no.	1700	th. nos.	18	31	50	85
15	bicycles-complete . .	C	no.	137	th. nos.	1060	145	1600	219
16	sub-total	C	..	..	..	..	446	..	654
	ELECTRICAL MACHINERY TURBINES AND GENERATORS.								
17	steam	K	KW	120	th. KW	..	..	350	42
18	hydro	K	KW	100	th. KW	..	..	100	10
	ELECTRIC MOTORS								
19	below 150 KW . .	K	KW	125	th. KW	540	68	1865	233
20	above 150 KW . .	K	KW	125	th. KW	..	..	200	25
	ELECTRIC TRANSFORMERS.								
21	upto 33 KV . . .	K	KVA	50	mill KVA	1·4	70	3·5	175
22	above 33 KV . . .	K	KVA	22	mill. KVA	..	..	3·4	75
23	controlgear and switchgear	K	..	..	Rs. millon	40	40	150	150
24	A.C.S.R. conductors H.T.	K	tonne	3570	th. tonnes	23·6	84	55	196
25	A.A. condutors (AAC)	K	tonne	4000	th. tonnes	n.a.	..	10	40
26	bare copper conductors .	K	tonne	4800	th. tonnes	10	48	10	4
27	paper insulated cables .	K	kilometre	19000	kilometres	992	19	7200	137
28	dry core cables . .	K	kilometre	6250	kilometres	1733	11	3200	20
29	coaxial cables . .	K	kilometre	12500	kilometres	91·7	1	480	6
30	VIR and PVC cables .	K	th. metres	620	m. metres	195	121	550	341
31	sub—total . . .	K	..	..	..	..	462	..	149
32	winding wires . .	I	tonne	7675	th. tonnes	4·6	35	12	92
33	storage batteries . .	I	no.	88	th. nos.	521	46	750	66
34	sub—total . .	I	..	..	..	..	81	..	15

ON-ELECTRICAL MACHINERY AND EQUIPMENT, INDIA 1960-61—1975-76

166-67		1967-68		1968-69		1969-70		1970-71		1975-76	
prod.	value	prod.	value	prod.	value	prod.	value	prod.	value	prod.	value
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
240	100	200	83	160	66	100	42	..	..	..	..
110	160	210	305	250	363	280	406	300	435	325	471
75	79	100	105	125	131	150	158	150	158	300	315
40	680	45	765	45	765	50	850	55	935	60	1020
1900	247	1900	247	2000	260	2000	260	2000	260	2200	286
60	1500	70	1750	80	2000	100	2500	125	3125	175	4375
60	120]	70	140	80	160	90	180	100	200	200	400
..	..	..	..	..	..	..	..	160	160	300	300
..	2886	..	3395	..	3745	..	4396	..	5273	..	7167
250	250	300	300	350	350	400	400	400	400	650	650
75	38	90	450	110	55	135	68	160	80	200	100
..	288	..	345	..	405	..	468	..	480	..	750
40	400	45	450	50	500	55	550	60	600	100	1000
60	102	70	119	85	145	100	170	120	204	200	340
1850	253	2150	295	2500	343	2900	397	3300	452	4000	548
..	755	..	864	..	988	..	1117	..	1256	..	1888
400	48	700	84	1350	162	1800	216	2100	252	3000	360
150	15	300	30	600	60	850	85	1250	125	1500	150
2000	250	3000	375	4000	500	5000	625	6000	750	1000	1250
250	31	300	38	700	88	1200	150	1500	188	2500	313
4·1	205	4·8	240	5·6	280	6·5	325	7·5	375	12·0	600
4·0	88	6·0	132	8·0	176	10·0	220	13·0	286	18·0	396
200	200	260	260	340	340	450	450	600	600	800	800
60	214	70	250	80	286	90	321	100	357	130	464
12	48	14	56	16	64	18	72	20	80	25	100
10	48	7·5	36	7·5	36	5	24	5	24	5	24
8275	157	9500	181	10900	207	12500	238	14000	266	20000	380
3800	24	4450	28	5200	33	6000	38	7000	44	9000	50
510	6	510	6	550	7	550	7	600	8	800	10
700	434	850	527	1000	620	1200	744	1400	868	2000	1240
..	1768	..	2243	..	2859	..	3515	..	4223	..	6143
16	123	22	169	30	230	40	307	55	422	80	614
900	79	1000	88	1200	106	1400	123	1600	141	3000	264
..	202	..	257	..	336	..	430	..	563	..	876

TAB

B.

sl. no.	industries	item classification	price per unit		unit of production	1960-61		1965-66	
			unit	value (Rs.)		prod.	value	prod.	val
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
35	electric fans	C	no.	108	th. nos.	1060	114	2500	27
36	house service meters	C	no.	41	th. nos.	510	21	2030	
37	electric lamps (incl. miniature lamps)	C	no.	0·53	mil. nos.	42	22	118	6
38	flourescent tubes	C	no.	2·78	mill. nos.	1·7	5	6	
39	dry batteries	C	no.	0·37	mil. nos.	214	79	325	12
40	refrigerators	C	no.	1610	th. nos.	11·4	18	30	4
41	air conditioners	C.	no.	2400	th . nos.	10·7	26	40	9
42	water coolers	C	no.	2190	th. nos.	2·2	5	5	1
43	sub-total	C	..	..	..	..	290	..	70
	ELECTRONICS								
44	electronic measuring and testing instruments	K	..	..	Rs. million	..	..	n.a.	..
45	transmitters, industrial heating, railway signalling and other industrial equipment	K	..	..	Rs. million	..	..	n.a.	..
46	sub-total	K	..	..	..	..	..	..	..
47	raw materials and components of which	I	..	..	Rs. million	..	..	n.a.	..
48	tubes and transistors	I	..	..	Rs. million	..	..	n.a.	..
49	resistors, capacitors switches and relays	I	..	..	Rs. million	..	..	n.a.	..
50	sub—total	I	..	..	..	..	..	..	..
51	radio receivers	C	no.	200	th. nos.	280	56	650	13
52	public address system and other consumer items	C	..	..	Rs. million	..	..	n.a.	..
53	sub-total	C	..	..	..	..	56	..	13
	OTHER INDUSTRIAL MACHINERY								
54	cranes	K	tonne	3900	th. tonnes	2	8	30	117
55	precision instruments	K	..	..	Rs. million	30	30	80	8
56	surgical instruments and x-ray equipment	K	..	..	Rs. million	2	2	50	5
57	machine tools	K	..	..	Rs. million	72	72	250	25
58	diesel engines (stationery excl. transport)	K	no.	2050	th. nos.	43	88	66	13
59	power driven pumps	K	no.	2500	th. nos.	105	263	150	375
60	air compressors	K	..	..	Rs. million	15	15	60	6
61	power boilers	K.	ton.st/hr.	62500	ton. st./hr.	..	..	2000	12
62	industrial boilers	K	..	..	Rs. million	5	5	100	10
63	heavy plate and vessel works	K	tonne	3000	th. tonnes	..	..	23	6
64	chemical machinery	K	..	..	Rs. million	15	15	80	8
65	heavy equipment & metallurgical machinery	K	tonne	6000	th. tonnes	..	..	60	360

B. 3 : (*contd.*)

(value in Rs. million)

1966-67		1967-68		1968-69		1969-70		1970-71		1975-76	
prod	value	prod	value	prod	value	prnd	value	prod	value	prod	value
(10)	(11)	(12)	(13)	(14)	(15)	16)	(17)	(18)	(19)	(20)	(21)
2700	292	3000	324	3300	356	3600	389	4000	432	5500	594
2100	86	2200	90	2300	94	2400	98	2500	103	3000	123
131	69	145	77	160	85	180	95	200	106	500	265
8	22	11	31	15	42	20	56	27	75	120	334
360	133	400	148	450	167	500	185	550	204	900	333
45	72	60	97	75	121	90	145	100	161	250	403
45	108	50	120	60	144	70	168	80	192	130	312
10	22	15	33	20	44	25	55	30	66	50	110
..	804	..	920	..	1053	..	1191	..	1339	..	2474
n.a	..	n.a.	..	n.a.	..	n.a.	..	50	50	125	100
n.a.	..	n.a.	..	n.a.	..	n.c.	..	250	250	500	450
..	..	..	..	..	..	..	..	..	300	..	550
n.a.	..	n.a.	..	n.a.	..	n.a.	..	300	300	600	550
n.a.	..	n.a.	..	n.a.	..	n.a.	..	80	120	250	220
n.a.	..	n.a.	..	n.a.	..	n.a.	..	80	80	150	130
..	..	..	..	..	..	..	..	..	500	..	900
900	180	1200	240	1600	320	2000	400	2500	500	4000	800
n.a.	..	n.a.	..	n.a.	..	n.a.	..	200	200	500	400
..	180	..	240	..	320	..	400	..	700	..	1200
40	156	50	195	60	234	75	292	100	390	150	585
140	140	200	200	290	290	400	400	550	550	1000	1000
55	55	60	60	70	70	90	90	100	100	250	250
330	330	440	440	580	580	760	760	1000	1000	1600	1600
70	144	80	164	90	184	100	205	110	226	140	287
170	425	180	450	200	500	230	575	250	625	350	875
70	70	80	80	110	110	140	140	160	160	250	250
3000	188	4500	281	5500	344	7000	438	8000	500	14000	875
130	130	160	160	190	190	220	220	250	250	400	400
30	90	40	120	45	135	50	150	60	180	120	360
110	110	160	160	225	225	325	325	360	360	900	900
60	360	70	420	100	600	120	720	140	840	200	1200

TABLE

sl. no.	Industries	item classi-fication	price per unit		unit of produc-tion	1960-61		1965-66	
			unit	value (Rs.)		prod.	value	prod.	value
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
66	coal and other mining machinery	K	tonne	4400	th. tonnes	0·6	3	15	66
67	cotton textile machinery .	K	..	..	Rs. million	104	104	200	200
68	cement machinery . .	K	..	..	Rs. million	6	6	45	45
69	sugar machinery . .	K	..	..	Rs. million	42	42	120	120
70	paper machinery . .	K	..	..	Rs. million	neg	neg	70	70
71	printing machinery .	K	..	..	Rs. million	1	1	5	5
72	jute textile machinery .	K	..	..	Rs. million	17	17	27	27
73	dairy machinery . .	K	..	..	Rs. million	2	2	25	25
74	tea processing machinery .	K	..	..	Rs. million	12	12	23	23
75	construction machinery .	K	..	..	Rs. million	15	15	40	40
76	crawler tractors . .	K	no.	100,000	nos.	..	..	500	50
77	dumpers and scrapers .	K	no.	100,000	nos.	..	..	500	50
78	shovels	K	no.	100,000	nos.	..	..	100	10
79	road rollers . . .	K	no.	40,000	nos.	388	16	900	36
80	tractors . . .	K	no.	7,000	th. nos.	..	..	10	70
81	tractor implements . .	K	..	..	Rs. million	..	..	21	21
82	sub-total . . .	K	..	..	..	..	716	..	2659
83	iron castings . .	I	tonne	985	th. tonnes	..	..	800	788
84	steel castings . .	I	tonne	1475	th. tonnes	35·2	52	130	192
85	steel forgings . .	I	tonne	1475	th. tonnes	35·2	52	130	192
86	structural fabrication .	I	tonne	985	th. tonnes	229	226	1000	985
87	gear cuttings . .	I	tonnde	900	tonne	..	..	4000	4
88	ball and roller bearings .	I	no.	5·6	mill. nos.	3·2	18	15	84
89	grinding wheels . .	I	tonne	5950	th. tonnes	2	12	4·5	27
90	sub—total . . .	I	..	..	..	..	360	..	2272
91	type writers . . .	C	no.	760	thou. nos.	23·5	18	68	52
92	sewing machines . .	C	no.	120	thou. nos.	297	36	600	72
93	watches, clocks and time pieces . .	C	no.	60	thou. nos.	51	3	1080	65
94	sub-total	C	..	..	..	..	57	..	189
	TOTAL	K	capital goods		..	..	2377	..	6814
		I	intermediate cap goods			..	531	..	2660
		C	consumer durables		..	..	849	..	1681

Source : Perspective Planning Division Studies, April, 1964.

B. 4 :(*contd.*)

(value in Rs. million)

1966-67		1967-68		1968-69		1969-70		1970-71		1975-76	
prod.	value	prod.	value	prod.	value	prod.	value	prod.	value	prod.	value
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
20	88	30	132	40	176	50	220	65	286	90	396
230	230	270	270	320	320	375	375	400	400	500	500
65	65	80	80	100	100	120	120	150	150	250	250
130	130	140	140	160	160	180	140	200	200	250	250
80	80	100	100	120	120	140	160	160	160	350	350
20	20	30	30	40	40	60	60	80	80	180	180
28	28	29	29	31	31	33	33	35	35	40	40
30	30	35	35	40	40	45	45	50	50	90	90
25	25	30	30	35	35	40	40	45	45	60	60
45	45	50	50	60	60	70	70	75	75	150	150
575	58	660	66	760	76	870	87	1000	100	1300	130
600	60	700	70	800	80	900	90	1000	100	1300	130
120	12	140	14	160	16	180	18	200	20	300	30
950	38	1000	40	1050	42	1100	44	1200	48	2000	80
15	105	25	175	30	210	40	280	50	350	150	1050
32	32	53	53	63	63	84	84	105	105	315	315
..	3244	..	4044	..	5031	..	6201	..	7385	..	12583
1000	985	1200	1182	1400	1379	1700	1674	2100	2068	3300	3251
200	295	350	516	400	590	400	590	450	664	550	811
200	295	350	516	400	590	400	590	450	664	550	811
125	1231	1400	1379	1575	1551	1800	1773	1980	1950	3000	2955
5000	5	6000	5	8000	7	10,000	9	12,000	11	18000	16
17	95	20	112	25	140	30	168	40	224	70	392
5·3	32	6·2	37	7·3	43	8·5	50	10	60	20	119
..	2938	..	3747	..	4300	..	4854	..	5641	..	8355
75	57	85	65	95	72	105	80	120	91	180	137
685	82	780	94	880	106	1010	121	1100	132	1800	216
1370	82	1750	105	2220	133	2820	169	3500	210	6000	360
	221		264		311		370		433		713
	7898		9682		11635		14112		17181		26443
	3428		4349		5041		5752		7184		10883
	1960		2288		2672		3078		3728		6275

TABL

MATERIAL BALANCES

Consuming sectors	Unit	Production of consuming sectors		consumption norms tonnes/units	
		1970-71	1975-76	Coke	non-cocking coal
(1)	(2)	(3)	(4)	(5)	(6)
1. railways					
2. goods traffic (steam)	bill. tonne kilometres	88·2	85	..	110000
3. passenger traffic	bill. passenger kilometres	75·6	72·4	..	71400
4. other purposes (including shunting)		..	..	..	..
5. pig iron	000 tonnes	20000	32000	..	..
6. Electricity thermal	mill. kWh	55500	110000	..	600
7. cement	000 tonnes	23000	36000	..	340
8. paper and paper board	000 tonnes	1200	2100	5	2500
9. cotton textile	mill. metres	6400	9500	3	380
10. jute	000 tonnes	1600	1900	2	300
11. glass	000 tonnes	770	1000	40	1300
12. refractory	000 tonnes	2000	3000	100	450
13. sugar	000 tonnes	5000	8500	14	75
14. vanaspati	000 tonnes	725	1100	18	300
15. chemicals	index[1]	..	..	..	..
16. ceramics and potteries	000 tonnes	350	600	175	1500
17. foundary (in terms of pig)	000 tonnes	4000	6000	500	..
18. re-rolling mills (billets)	000 tonnes	1600	2000	4	..
19. engineering works	index[2]	..	..	..	..
20. ferro-manganese	000 tonnes	350	500	750	..
21. soda ash	000 tonnes	650	1000	265	..
22. calcium carbide	000 tonnes	80	80	750	..
23. brick-burning	index[3]	..	..	..	..
24. lime kilns	index[3]	..	..	..	..
25. bunker and export		..	..	..	..
26. domestic use	index[4]	..	..	..	..
27. miscellaneous		..	..	..	..
28. sub-cotal		..	..	..	..
29. colliery consumption		..	..	..	..
30. additions to stocks		..	..	..	..
31. total requirements		..	..	..	..

Source : P.P. Division studies.

NOTES : (1) Consumption in 1960-61 in this sector was 1·1 million tonnes; with index
estimated demand has been taken as 2·7 million tonnes in 1965-66 and 5·5 millio
tion or for improved efficiency of fuel use.

(2) Coke requirement in 1960-61 was estimated at 70,000 tonnes, with rising outpu
estimated demand in 1970-71 is 450,000 tonnes and in 1975-76—700,000 tonne

(3) The average consumption of coal for brick burning during 1959—61 was 1·
and in future years to the level of construction (or net investment) as compar

(in million tonnes)

	1965-66	1970-71	1975-76
for brick burning	2·7	5·3	7·5
lime kilns	·3	·5	·8
	3·0	5·8	8·3

(4) 1960 demand was estimated at 3 million tonnes in terms of raw coal; deman
ond to rising incomes and rising population.

C.I.

COAL : INDIA 1970-75.

requirement of coke (000 tonnes)		requirement of non coking coal (000 tonnes)							
		1970-71				1975-76			
1970-71	1975-76	steam	slack	middlings	total	steam	slack	middlings	total
(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
80	120	22500	..	..	22500	23000	..	..	23000
80	120	9700	..	..	9700	9400	..	..	9400
..	..	5400	..	..	5400	5200	..	..	5200
..	..	7400	..	..	7400	8400	..	..	8400
16670	24050	..	..	..	..	..	..	..	..
..	..	3000	14400	16300	33700	3000	38000	25000	66000
11	18	..	7800	..	7800	..	12200	..	12200
6	11	3000	..	..	3000	5250	..	..	5250
19	29	2430	..	..	2430	3610	..	..	3610
3	4	480	..	..	480	570	..	..	570
31	40	1000	..	..	1000	1300	..		1300
200	300	900	..	..	900	1350	..	..	1350
70	119	375	..	..	375	638	..	..	638
13	20	220	..	..	200	330	..	..	330
..	..	5500	..	..	5500	8800	..	..	8800
61	105	530	..	..	530	900	..	..	900
2000	3000	..	..	..	..	..	..	..	..
6	8	..	..	..	..	..	..	..	..
450	700	..	..	..	..	..	..	..	..
260	375	..	..	..	..	..	..	..	..
172	265	..	..	..	..	..	..	..	..
60	60	..	..	..	..	..	..	..	..
..	..	..	4300	1000	5300	4300	400	2800	7500
..	..	500	..	..	500	800	..	..	800
75	100	3000	..	..	3000	4000	..	..	4000
..	..	2500	2500	1500	6500	7000	..	3500	10500
550	750	1280	3800	..	5080	7000	..	..	7000
20737	30074	46215	32800	18800	98815	71848	50600	31300	153748
..	..	1976	..	..	1976	3075	..	..	3075
..	..	1000	..	..	1000	1000	..	..	1000
20737	30074	49100	32800	18800	101800	76000	50600	31300	157860

roduction (1960=100) going up to 240 in 1965-66 and 500 in 1970-71 and 800 in 1975-76, the onnes in 1970-71 and 8·8 million tonnes in 1975-76. No allowance has been made for substitu-

f engineering industry (index 1960=100, 1965-66—280; 1970-71—650, 1975-76—1000) the

illion tonnes; an additional 10 per cent was required for lime kilns. Relating estimates of dem- the base year the figures obtained in mill. tonnes were :

1965-66, 1970-71 and 1975-76 is put at 4·5, 6·5, 10·5 million tonnes respectively to corresp-

TABLE C.1a.

PRODUCTION GF COKE AND COAL, INDIA : 1970-71 AND 1975-76.

(000 tonnes)

production	1970-71			1975-76		
	coking and blendable	non-coking	total	coking and blendable	non-coking	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. raw coal raised of which	55000	82000	137000	80300	127000	207300
2. unwashed . . .	1000	82000	83000	1000	127000	128000
3. supplied to washeries	54000	..	54000	79250	..	79250
4. resulting in clean coal	31980	..	31980	44230	..	44230
5. resulting in middlings.	18830	..	18830	31270	..	31270
6. resulting in rejects .	3190	..	3190	3190	..	3190
7. clean coal supplied to railways . . .	1100	..	1100	..	..	..
8. clean coal supplied to coke ovens . .	30300	..	30300	44230	..	44230
9. addition of breeze (3 per cent) . . .	1000	..	1000	1400	..	1400
10. total for coke ovens (2 +8+9) . . .	32300	..	32300	46630	..	46630
11. from which coke .	24200	..	24200	34970	..	34970
12. of size above 20 m.m.	20740	..	20740	30074	..	30074
13. pearl and breeze. .	3460	..	3460	4896	..	4896

TABLE C. 2

MATERIAL BALANCES-PETROLEUM PRODUCTS—INDIA—1960-75

(000 tonnes)

products	1960-61			1965-
	demand	product-ion	export (+) import (—)	demand
(1)	(2)	(3)	(4)	(5)
1. Gasolines	940	1050	+190	1665
2. motor spirit plus aviation gas	940		—80	1065
3. naptha for fertilizers				100
4. naptha for petro-chemicals				
5. naptha for blast furnace injection				
6. exports and for J.P. 4				500
7. Kerosenes	2090	945	—1145	3200
8. kerosene	1900			2800
9. aviation turbine fuel	190			400
10. exports and tractor use				
11. High Speed diesel	1290	1080	—210	3000
12. railways	60			500
13. other transport etc.	1230			2500
14. Light diesel	650	525	—125	760
15. Furnace oil	1790	1650	—140	4700
16. Lubricants	240	22	—218	485
17. Bitumen	425	410	—15	580
18. Others	275	118	—157	450
19. Total products	7700	5800	+190 —2090	14840
20. Refinery fuel and losses		350		
21. Crude through put capacity		6150		

Source : The demand and production figures for the main products in 1965-66 and 1970-71 by the Ministry of Petroleum and Chemicals. The figures have been adjusted for

(000 tonnes)

66		1970-71			1975-76		
production	surplus (+) deficit (—)	demand	production	surplus (+) deficit (—)	demand	producions	surplus (+) deficit (—)
(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2314	+649	4185	4780	+595	7000	7300	+300
		1458			2400		
		1000			2000		
		1000			1600		
		200			500		
		527			500		
2513	—687	5285	5575	+290	8400	8725	+325
		4267			6400		
		618	..		1200		
		400			800		
2801	—199	6195	6405	+210	10250	10345	+ 95
		1395			2000		
		4800			8250		
755	— 5	1040	810	—230	1200	1010	—190
3505	—1195	7535	7410	—125	11600	11600	..
55	—430	800	806	+ 6	1280	1266	— 14
663	+ 83	1000	1100	+100	1300	1300	..
494	+ 44	700	609	— 91	950	754	—196
13100	+776	26740	27495	+1201	41980	42300	+720
	—2516			—446			—400
900			1755			2700	
14000			29250			45000	

are largely based on the "outline of fourth plan projects in the field of petroleum"
financial years.

TABLE C.2a.

REFINERY THROUGHPUT CAPACITIES, INDIA 1960-61—1970-71.

(000 tonnes,

refinery	1960-61	1965-66	1970-71
(1)	(2)	(3)	(4)
. Bombay (Burmah Shell)	2850	3750	4750
. Bombay (ESSO)	1950	2500	3500
. Vizagapatam (Caltex)	890	1050	1550
. Digboi	460	460	460
. Barauni	..	2000	3000
. Koyali	..	2000	3000
. Nunmati	..	740	1000
. Cochin	..	1500	3500
. Madras (projected)	..	..	2500
. Haldia (projected)	..	..	2500
. North West India (projected)	..	..	3500
. Total	6150	14010	29260

TABL

ELECRICITTY .BALANCE

	consuming industries	unit	production	
			1960-61	1965-66
(0)	(1)	(2)	(3)	(4)
	Iron & Steel :			
1	(a) iron ore	m. tonnes.	..	27
2	(b) finished steel	,,	2·2	6·5
3	(c) pig iron (for sale)	,,	0·9	1·2
4	ferro manganese	thou. tonnes	100	224
5	ferro silicon	,,	6	41
6	alloy steel	,,	..	51
7	aluminium	,,	18·5	69
8	copper ore mining	,,	..	990
9	copper-smelting	,,	8·9	36
10	zinc ore mining	,,	..	700
11	zinc—smelting	,,	3·2	18·4
12	coal (bituminous)	m. tonnes	53	89
13	coal (brown)	,,	..	6
14	coal washing	,,	..	22·4
15	petroleum-refining	,,	4·6	17
16	petroleum crude fertilisers	..	..	6
	(a) nitrogenous			
17	(i) electrolytic process	thous. tonnes	10	80
18	(ii) coal based	,,	80	475
19	(iii) naptha based	,,		85
20	(b) phosphatic	,,	55	270
	heavy chemicals			
21	(a) sulphuric acid	thou. tonnes	363	1500
22	(b) soda ash	,,	145	360
	(c) caustic soda			
23	(i) Chemical process	,,	..	50
24	(ii) electrolytic process	,,	100	310
25	plastics	,,	10	90
26	soaps	,,	150	500
27	synthetic rubber	,,	..	30
28	paper and paper board	,,	350	770
29	news print	thou. tonnes	25	30
30	cement	m. tonnes	8	14
31	cotton textiles	m. metres	4572	5600
32	jute	thou. tonnes	1065	1200
	rayon and staple fibre—			
33	(a) rayon filament	thou. tonnes	21·3	70
34	(b) staple fibre	,,	21·7	30
35	(c) chemical pulp	,,	..	120
36	woollen yarn	,,	12·7	30
37	silk	m. metres	320	500
38	sugar	m. tonnes	2·7	3·6
39	vegetable oil	,,	0·8	1·2
40	vanaspati ghee	thou. tonnes	330	550
41	bicycles	m. nos.	1	2·2
42	sewing machines	thou. nos.	300	600
43	electric fans	m. nos.	0·9	2·8
44	electric lamps	,,	39·5	83
45	matches	m. gross boxes	33	45
46	plywood	m. sq. metres	15·5	16

C.3.

INDIA 1960-75.

capacity		requirement of electricity (million kwh)				electricity consumption norm
1970-71	1975-76	1960-61	1965-66	1970-71	1975-76	
(5)	(6)	(7)	(8)	(9)	(10)	(11)
65	100	..	405	975	1500	15 kwh/ tonne
13·5	23	1100	3250	6750	11500	500 ,,
4	6·5	18	24	80	130	20 ,,
400	550	500	1120	2000	2750	5000 ,,
60	100	48	328	480	800	8000 ,,
500	1200	..	64	625	1500	1250 ,,
280	400	370	1380	5600	8000	20000 ,,
4900	8000	..	25	123	200	25 ,,
70	100	27	108	210	300	3000 ,,
2500	4000	..	18	63	100	25 ,,
60	100	13	77	252	420	4200 ,,
150	240	106	2225	3750	6000	25 ,,
12	15	..	120	240	300	20 ,,
54·5	82·8	..	112	273	414	5 ,,
30	45	161	595	1050	1575	35 ,,
12	18	..	180	360	540	30 ,,
80	80	60	1280	1280	1280	16000 ,,
920	1420	302	1805	3496	5396	3800 ,,
1000	2000		255	3000	6000	3000 ,,
1250	2000	25	122	563	900	450 ,,
3500	6000	91	150	350	600	100
720	1100	22	54	108	165	150 ,,
90	90	..	25	45	45	500 ,,
670	1060	420	1240	2680	4452	4000 ,,
350	600	1	5	21	36	60 ,,
720	1000	30	100	144	200	200 ,,
120	300	..	21	84	210	700 ,,
1500	2500	630	1386	2700	4500	1800 ,,
330	500	16	20	215	325	650 ,,
26	40	960	1680	3120	4800	120 ,,
7100	11000	1998	2447	3103	4807	437 kwh/th. metres
1600	2000	415	468	624	780	390 kwh/tonne
100	140	147	482	689	965	6890 ,,
90	160	46	55	164	291	1820 ,,
250	400	..	60	125	200	500 ,,
40	60	84	198	265	397	6615 ,,
730	1100	105	165	241	363	330 kwh/th. mtres
5·5	8·5	162	216	330	510	60 kwh/tonne
2·2	3·5	100	150	275	438	125 ,,
810	1400	73	121	178	308	220 ,,
3·5	4·5	15	33	53	68	15 kwh/no.
1200	2000	18	36	72	120	60 ,,
4	6	18	56	80	120	20 ,,
120	240	6	12	18	36	150 kwh/th. nos.
52	61	20	27	31	37	600 kwh/th. gross bones
45	90	14	15	42	84	930 kwh/th. sq. metres

TABLE

ELECRICITY

	consuming industries	unit	production	
			1960-61	1965-66
(0)	(1)	(2)	(3)	(4)
47	calcium carbide	thou. tonnes	10	58
48	automobile tyres	m. nos.	1·4	4·6
49	auto mobiles	thou. nos.	53·5	94
50	coke	m. tonnes	5	15
51	machinery	index.	100	278
	total		..	..

C.3.
BALANCE—(contd.)

capacity		requirement of electricity (million Kwh)				electricity consumption norm
1970-71	1975-76	1960-61	1965-66	1970-71	1975-76	
(5)	(6)	(7)	(8)	(9)	(10)	(11)
85	85	35	203	298	298	3500 kwh/tonne
8·2	15	150	492	877	1605	107 kwh/no.
215	300	54	94	215	300	1000 ,,
32	36	125	375	800	900	25 kwh/tonne
693	1100	460	1280	3188	5060	1960-61-460 m. kwh.
		9239	25150	52305	82625	

TABLE C.3a.

ELECTRICITY BALANCE

(million kwh)

Sl No.	particulars	1960-61		1965-66		1970-71		1975-76	
(0)	(1)	(2)		(3)		(4)		(5)	
1	major industrial consumption		9239		25159		52305		82625
2	other industrial consumption (growth rate 10% p.a.)		3052		4917		7917		12752
3	total industrial consumption	(75)	12291	(76)	30076	(76)	60222	(76)	95377
4	domestic consumption	(9)	1475	(8)	3166	(8)	6339	(8)	10040
5	commercial consumption	(6)	819	(5)	1979	(5)	3962	(5)	6275
6	irrigation consumption	(5)	820	(6)	2374	(6)	4754	(6)	7530
7	other purposes	(6)	983	(5)	1979	(5)	3962	(5)	6274
8	total	(100)	16388	(100)	39574	(100)	79239	(100)	125496
9	assumed loss 20% of item (8)		3277		7915		15848		25099
10	total generation		19665		47489		95087		150595
11	total installed capacity (m. kw.)[1]		5·7		12·5		23·8		37·6
	of which, public utility (m. kw).		4·7		11·6		23·0		36·8
	self generating (m. kw.)[2]		1·0		0·9		0·8		0·8

NOTE.—figures in brackets represent percentages.

[1] assuming rate of utilisation at 3425 for 1960-61, 3800 for 1965-66 and 4000 for 1970-71 and 1975-76.

[2] these figures do not include the Neyveli Thermal Power Station which will be 400 MW by the end of Third Plan and the Power Station of HindustanAluminium Corporation of 125 MW and the Rourkela Power Station of 75 MW although these are non-utility power stations. The capacity of these power stations have been included in the utility totals.

TABLE C.4.

MATERIAL BALANCE : IRON ORE INDIA 1960-75.

nsuming products	production of consuming products ('000 tonnes)				consumption norms tonnes/tonne	requirement of iron ore ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76		1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
pig iron	4200	8200	20000	32200	1·7	7600	14[illegible]00	34000	54700
of which, or found-y use .	1032	1200	4000	6000		..	..	..	..
export .	..	..	..	..	..	3400	12000	25000	35000
addition to tock .	..	..	..	..	..	(—)300	300	300	300
Total re-quirement	..	..	..	..	..	10700	26300	59300	90000
pply : domestic production	..	..	..	..	..	10700	26300	59300	90000

TABLE C.5. MATERIAL BALAN

consuming products	production of consuming products ('000 tonnes)		
	1960-61	1965-66	1970-71
(1)	(2)	(3)	(4)
1. pig iron (blast furnace) .	4200	8200	20000
2. ferro manganese . .	91	204	350
3. battery manufactur (m. cells)	214	325	550
4. export	..	..	..
5. addition to stocks . .	..	..	..
6. total requirement . .	..	..	..
Supply :			
domestic production	..	..	..

NOTE : ¹—tonnes per million cells.

ANGANESE ORE : INDIA 1960-75

consumption norms tonnes/ tonne	requirement of manganese ore ('000 tonnes)			
	1960-61	1965-66	19-70 71	1975-76
(6)	(7)	(8)	(9)	(10)
0·035	147	287	[illegible]00	1120
2·4	218	490	840	1200
50[1]	11	16	28	45
..	1160	1300	1300	1500
..	(—)337		..	..
..	1199	2093	2868	3865
..	1199	2100	3000	3900

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METERIAL BALAN

Consuming products	Production of consuming products ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-
(1)	(2)	(3)	(4)	(
1 cement	7800	12000	23000	36
2 blast furnace—limestone	4200	9800	20000	32
3 steel milling shop—limestone	3300	7800	17500	29
4 sugar	3000	3600	5000	8
alkali manufacture				
5 (i) soda ash	145	340	650	10
6 (ii) caustic soda-chemical	27	20	60	1
7 glass	225	400	770	10
8 calcium carbide	10	55	80	
9 nitro lime fertilizer (in terms of N.2)	80	140	200	3
10 ferro manganese	91	200	350	5
11 paper & paper board (incl. newsprint)	348	698	1500	26
12 construction (Rs. million)	4000	6750	11620	18
13 total requirement				
Supply :— domestic production				

NOTES : 1—carbonation process

2—sulphitation process. The share of sugar production in 1965-66 by sulph on process is assumed to be 76%. All the additional productio 1970-71 and 1975-76 are also assumed to be by sulphitation process.

3—tonnes/Rs. million.

C. 6

LIMESTONE : INDIA 1960-75

consumption norms tonnes/tonne	requirement of limestone ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
1·45	11310	18850	33350	52200
0·44	1848	4312	8800	14168
0·17	561	1326	2975	4930
·38[1]	365	437	495	635
·04[2]				
1·10	160	374	715	1100
0·20	5	4	12	20
0·029	7	12	22	29
2 0	20	110	160	160
4·0	320	560	800	1200
0·5	45	100	175	250
0·826	287	577	1239	2148
2·30[2]	920	1553	2673	4313
[redacted]	15848	28215	51416	81153
	16000	28500	52000	82000

TABLE

MATERIAL BALANCES :

Consuming products	production of consuming products ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
1 pottery ceramics, refractories	660	1320	2350	3600
2 paper and paper board	348	670	1200	2000
3 cement	7844	12000	23000	36000
extile (cotton) (mill metres)	4616	5075	6400	9500
5 rubber	58	110	250	420
6 insecticides	7	18	35	70
7 others				
8 total requirement[1]				
Supply :				
domestic production				

NOTE : [1]—tonnes per million metres

NACLAY : INDIA 1960-75

umption norms onnes/tonne	requirement of china clay ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
0·465	305	615	1090	1675
0·052	18	35	62	104
0·0018	14	22	41	65
1·75[1]	8	9	11	17
0·067	4	7	17	28
0·043	negl.	1	2	3
	1	1	2	4
	350	690	1225	1896
	353	700	1250	1900

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MATERIAL BALANC

Consuming products	production of consuming products ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-
(1)	(2)	(3)	(4)	(
1 ammonium sulphate	381	400	800	1
2 cement	7844	12000	23000	36
3 potteries and ceramics	100	200	350	
4 addition to stocks				
5 total requirement				
Supply :				
domestic production				

C. 8

GYPSUM : INDIA 1960-75

consumption norms/ tonnes/tonne	requirement of gypsum ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
1·3	495	520	1040	1560
0·04	314	480	920	1440
0·4	40	80	140	240
	148	20	..	..
	849	1100	2100	3240
	997	1100	2100	3250

TABLE

MATERIAL BALANCES :

Consuming products	production of consuming products ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
1 aluminium	18·5	68	240	360
2 cement	7844	12000	23000	36000
3 chemicals aluminium sulphate . . .	52·3	80	120	200
4 chemicals—(index 1960-100) . . .	100	240	500	800
5 refractories	560	1120	2000	3000
6 kerosene refining	945	2500	5600	8700
7 other uses & stock (12% of items 1 to 6 in 1965-66, 1970-71 & 1975-76)				
8 export				
9 addition to stcoks				
10 total requirement				
Supply : domestic production				

C. 9

BAUXITE : INDIA 1960-75

consumption norms tonnes/tonne	requirement of bauxite ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
5·5	101	374	1320	1980
0·0037	29	44	85	133
0·405	21	32	49	81
	6	14	30	48
0·172	96	193	344	516
0·013	12	33	73	113
	53	82	231	394
	76	150	300	300
	9	..	50	80
	385	920	2482	3645
	385	920	2500	4000

TABLE

MATERIAL BALANCES :

Consuming products	production of consuming products ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
1 metallurgical-ferrochrome	..	20	50	70
2 refractories (4 % of total prodn) . .	21	45	80	120
3 chemicals-bichromates	6	10	15	20
4 exports				
5 total requiement				
Supply : —				
domestic production				

0

ROMITE—INDIA : 1960-75

umption norms onnes/tonne	requirement of chromite (000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(8)	(10)
2·20	..	44	110	154
0·59	12	27	48	71
2	12	20	30	40
	41	..	..	..
	65	91	188	265
	100	90	190	270

TABLE C. 11

MATERIAL BALANCES : SALT : INDIA 1960-75

Consuming products	production of consuming products			
	unit	1960-61	1965-66	1970-71
(1)	(2)	(3)	(4)	(5)
1 chemicals—caustic soda . .	'000 tonnes	188	300	600
2 soda ash . . .	„	240	340	600
3 hydrochloric acid .	„	15	30	60
4 synthetic rubber (SBR) . .	„	..	30	40
5 leather industry . . .	million hides	30	34	55
6 fish curing	'000 tonnes	140	180	260
7 unspecified industries . .	index	100	175	300
8 edible use	„	100	112	127
9 livestock, agriculture, generrm farm use .	„	100	103	106
10 exports				
11 addition to stocks . . .				
12 total requirement				
Supply :— domestic production				

NOTES :—[1] tonnes per '000 hides.

consumption norms tonnes/tonne	requirement of salt ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(7)	(8)	(9)	(10)	(11)
1·43	269	429	858	1502
1·34	322	456	804	1340
0·469	7	14	28	56
0·2	..	6	8	8
5[1]	150	170	275	400
0·169	24	30	44	68
	80	140	240	450
	2738	3070	3480	3915
	214	220	227	242
	(—)425	500	1000	2000
	(—) 279	165	336	489
	3950	5200	7300	10470
	3950	5200	7300	10500

TABLE

MATERIAL BALANCES :

consuming products	production of consuming products ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
1 asbestos cement . . .	217	340	450	600
2 automobile ancillaries . .				
3 other uses				
4 total requirements . . .				
Supply—				
domestic production . .				
imports				

C. 12

ASBESTOS INDIA : 1960-75

consumption norms tonnes/tonne	requirement of asbestos ('000 tonnes) 1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
0·124	27	42·2	55·8	74·4
	0·7	2	4	6
	1·3	2·1	3·2	4·6
	29	46·3	63·	85·
	2	3	5	10
	27	45	60	75

TABLE

MATERIAL BALANCES :

	cement consuming sector	net investment (Rs. million)			
		1960-61	1965-66	1970-71	1975-76
	(1)	(2)	(3)	(4)	(5)
1	agriculture and allied activities (excluding irrigation) . .	2000	2750	4300	5700
2	minor irrigation . . .	400	900	1200	1800
3	major and medium irrigation .	930	1600	2000	3500
4	power	1180	2650	5500	7500
5	large and medium industries and mining	3200	6750	16000	22000
6	village and small industries . .	750	1000	1750	2500
7	transport and communications (excluding roads) . . .	2680	3450	7400	10200
8	roads	500	900	2200	3300
9	health	410	700	1750	2200
10	education	300	600	1400	2000
11	housing and other construction .	2900	3500	7000	10500
12	inventories	1750	2200	4500	6000
13	sub-total (for construction) .	17000	27000	55000	77200
14	cement consuming industries .				
15	maintenance, defence etc. . .				
16	stocks (additions) 25% of increase in annual production . .				
17	exports				
18	total requirements . . .				
19	installed capacity desired . .				

C. 13

CEMENT INDIA : 1960-75

cement consumption norms: tonnes per Rs. million investment	requirement of cement (000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
250	500	688	1075	1425
500	200	450	600	900
800	744	1280	1600	2800
340	401	901	1870	2550
220	704	1485	3520	4840
300	225	300	525	750
250	670	862	1850	2550
300	150	270	660	990
450	184	315	788	990
375	112	225	525	750
850	2465	2975	5950	8925
..	..	..	..	..
	6355	9751	18963	27470
	300	800	1500	2100
	800	1500	2400	3800
	100	250	500	600
	100	200	400	1500
	7655	12501	23763	35470
	9000	14000	26000	40000

TABLE

MATERIAL BALANCES

	consuming products	production of consuming products ('000 tonnes)			
		1960-61	1965-66	1970-71	1975-76
	(1)	(2)	(3)	(4)	(5)
1	phosphatic fertilizers (P_2O_5) .	54	200	750	1700
2	ammonium sulphate (as N_2) (based on the use of H_2SO_4) .	19	65	80	100
3	pickling of finished steel . .	2200	5800	11500	22000
4	rayon filament/staple fibre .	42	100	170	300
5	aluminium sulphate . . .	53	100	150	240
6	petroleum refining . . .	5800	13000	27000	42000
7	titanium dixoide . . .	2·7	20	30	50
8	D.D.T.	2·8	6	9	12
9	bichromates	5	12	20	30
10	alums	4·5	20	30	45
11	copper sulphate . . .	4	8	15	25
12	sub-total (1 to 11) . . .				
13	other misc. uses (5% of 12) .				
14	addition to stocks and reserves with consumers				
15	total requirement . . .				
Supply					
	domestic production . .				

NOTE:—[1]. Kilogrammes per tonne.

C. 14

SULPHURIC ACID INDIA 1960-75

consumption norms tonnes/tonne	requirement of sulphuric acid (000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
2·50	135	500	1875	4250
3·70	70	240	296	370
0·01	22	58	115	220
1·40	59	140	238	420
0·51	27	51	77	122
1·80[1]	10	25	50	75
2·20	6	44	66	110
2·50	7	15	23	30
0·50	3	6	10	15
0·30	1	6	9	14
0·40	2	3	6	10
	342	1088	2765	5636
	17	54	138	72
	..	53	77	92
	359	1195	1980	6000
	354	1200	3000	6000

TABLE C.

MATERIAL BALANCES: CA

	consuming products	production of consuming products ('000 tonnes)			
		1960-61	1965-66	1970-71	1975-76
	(1)	(2)	(3)	(4)	(5)
1	paper and paper board	364	670	1200	2000
2	newsprint	23	28	300	450
3	viscose rayon and staple fibre	47	100	170	300
4	soap[2]	380	500	800	1000
5	aluminium	18	68	240	360
6	petroleum refining	6200	14000	29250	45000
7	vanaspati	341	500	725	1100
8	cresols and phenol	5	8	15	25
9	dye-stuffs	5	10	13	20
10	synthetic detergents	1·5	8	20	30
11	textiles[4]	101	112	152	250
12	sub-total (1 to 11)				
13	miscellaneous uses (5% of 12)				
14	reserve with consumers (8% of 12)				
15	total requirement				
Supply:—					
	domestic production				

NOTES:—[1]. less consumption of caustic soda on account of the use of imported pulp for paper manufacture and imported alumina for aluminium manufacture.

[2]. includes use for un-organized sector also.

[3]. per thousand tonnes.

[4]. index of production.

C. 15

CAUSTIC SODA, INDIA : 1960-75

consumption norms tonnes/tonne	requirement of caustic soda ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
0·10	28[1]	67	120	200
0·05	1	1	15	23
1·00	47	100	170	300
0·10	38	50	80	100
0·20	2[1]	14	48	72
0.60[3]	4	8	18	27
0·10	3	5	7	11
0·34	2	3	5	9
0·70	4	7	9	14
0·33	1	3	7	10
	38	43	58	95
	168	301	537	861
	8	15	27	43
	—	24	43	71
	176	340	607	975
		340	600	1000

TA

MATERIAL BALAN

consuming products	production of consuming products ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-7
(1)	(2)	(3)	(4)	(5)
1 glass	226	405	770	1000
2 caustic soda (chemical process)	12	20	60	100
3 sodium silicate	70	120	200	300
4 paper and paper board	364	670	1200	2000
5 sodium bicarbonate	8·7	15	35	60
6 bichromates	5·2	12	20	30
7 dyestuffs	5·2	10	14	20
8 cresols and phenol	5	8	15	25
9 dhobies and laundries	..	..	..	..
10 textile[1]	100	112	152	250
11 miscellaneous other users (5% of 1-10)				
12 sub-total				
13 reserve with consumers (approx: 8% of 12)				
total requirement				
Supply.				
domestic production				
from stocks				
imports				

Note:

[1] Index

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ODA ASH INDIA 1960-75

consumption norms tonnes/tonne	requirement of soda ash ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
0·30	67·8	122	231	300
1·60	19·2	32	96	160
0·25	17·5	30	50	75
0·02	7·3	13	24	40
0·80	7·0	12	28	48
0·80	4·2	10	16	24
0·82	4·3	8	11	16
1·30	6·5	10	20	33
..	85·0	105	132	170
..	9·7	11	17	24
	11·0	18	32	40
	239·5	371	657	930
	20·5	29	53	70
	260	400	710	1000
	145	340	700	1000
	15	..	..	..
	100	60	..	..

TAB

MATERIAL BALANC

	consuming products	production of consuming products ('000 tonnes)			
		1960-61	1965-66	1970-71	1975-76
	(1)	(2)	3	(4)	(5)
1	paper and paper board insecticides	364	670	1200	2000
2	B.H.C.	4	10	20	25
3	D.D.T.	3	3	9	12
4	polyvinyl chloride resin	3	25	70	120
5	bleaching powder (stable)	7	20	30	45
6	inorganic chlorides				
7	cleaning fluids and refrigerants	..	8	12	20
8	chlorinated ethylene products (other than cleaning fluids)	..	5	10	20
9	dicalcium phosphate	..	20	50	80
10	chlorine gas and hydrochloric acid				
11	textile bleaching 2/	100	112	152	250
12	water purification				
13	phosphoric acid				
14	misc. other uses				
15	total requirement				

Supply:—

domestic production—total by-products.
chlorine available
unutilised surplus

NOTES:—

[1]. Less consumption on account of the use of imported pulp.

[2]. Index.

17

HLORINE INDIA : 1960-75

consumption norms tonnes/tonne	requirement of chlorine ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
0·1	20[1]	67	120	200
1·4	6	14	28	35
2	6	6	18	24
0·75	2	19	53	90
0·4	3	8	12	18
	4	8	20	35
1·2	..	10	14	24
0·8	..	4	8	16
0·3	..	6	15	24
	4	13	20	30
	4	4	6	10
	4	10	15	25
	..	5	20	30
	2	6	11	24
	55	180	360	585
	75	240	460	750
	20	60	100	165

TABLE C. 18 : MATERIAL BALANCES

consuming products	production of consuming products (000 tonnes) 1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
1 plastics—PVC and PVA[1] . .	..	11	37	22
2 dissolved acetylene . . .	2·7	6	11	20
3 acetylene generation in engineering industries				
4 mine lighting and miscellaneous uses				
5 total requirement . . .				
Supply :—				
domestic production . .				
imports				
likely availability of acetylene from petro-sources . .				

NOTES :— [1]Carbide based units only.
[2]tonnes/'000 cubic metres.

TABLE C 19. : MATERIAL BALANC

consuming products	production of consuming products ('000 tonnes) 1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
		(i) Oxygen		
1 finished steel : domestic	2400	5800	11500	21500
2 imported	920	1000	500	500
3 explosives				
4 other uses				
5 total requirement . . .				
Supply :—				
domestic production . .				
		(ii) dissolved acetylene		
1 finished steel : domestic	2400	5800	11500	21,500
2 imported	920	1000	500	500
3 total requirement . . .				
Supply :—				
domestic production : .				

LCIUM CARBIDE : INDIA :1960—75

consumption norms tonnes/tonne	requirement of calcium carbide (000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
1·6	..	18	59	35
3·0[a]	8	18	33	60
	5	15	25	35
	2	4	8	10
	15	55	125	140
	10	58	85	85
	6	..	..	..
	..	..	40	55

DUSTRIAL GASES : INDIA : 1960—75

consumption norms cu. metre/tonne	requirement of oxygen (mill. cubic metres)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
6·0—6·6	14·4	34·8	75·9	141·9
6·0—6·6	5·5	6·0	3·3	3·3
	5·0	9·0	15·0	25·0
	0·1	0·2	0·8	1·5
	25·0	50·0	95·0	171·7
	25·0	50·0	95·0	175·0
0·9	2·2	5·2	10·4	19·4
0·9	0·8	0·9	0·4	0·5
	3·0	6·1	10·8	19·9
	3·0	6·1	11·0	20·0

TABLE C. 20 : MATERIAL BALANCES

consuming products	production of consuming products ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
1 sulphuric acid . . .	360	1200	3000	6000
2 carbon disulphide . . .	18	45	70	120
3 sugar	3000	3500	5000	8300
4 rubber-synthetic and natural .	59	110	250	420
5 paper and paper board . .	366	670	1200	2000
6 sodium hydrosulphite. . .	..	10	16	24
7 other uses (5% of 1—6) . .				
8 sub-total . . .				
9 reserve with consumers (approx. 8% of 8)				
10 total requirement . . .				
Supyly :—				
domestic production				
(*i*) pyrites				
(*ii*) refinery gases .				
(*iii*) coke oven gases .				
(*iv*) zinc smelters .				
(*v*) copper roasters .				
total . .				
imports—elemental sulphur				

SULPHUR : INDIA : 1960-75

consumption norms tonnes/tonne	requirement of sulphur ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
0·345	124	413	1038	2070
0·8	14	36	56	96
0·005	15	17	25	40
0·025	1·5	3	7	11
0·005	1·8	3	6	10
0·5	..	5	8	12
	7	23	57	111
	163	500	197	2350
	12	40	93	175
	175	540	1290	2525
	..	50	130	200
	..	2	5	10
	..	5	5	5
	..	..	25	35
	4	17	35	50
	4	74	200	300
	174	470	1090	2225

TABLE C. 21 : MATERIAL BALANCES :

consuming products	production of consuming products ('000 tonnes) 1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
1 matches[1]	5486	6050	7200	9200
2 drugs and pharmaceutical[2]				
3 pesticides (rodenticide and malathion)	..	185	370	610
4 detergents	1524	8130	20320	30480
5 water conditioning[3]				
6 plasticizers (TCP)	203	410	1020	1520
7 miscellaneous uses[3] (food industries etc.)				
8 sub-total (1-7)				
9 reserve with consumers (approx. 5% of 8)				
10 total requirement				
Supyly :—				
domestic production				

NOTES :— [1] million boxes

[2] requirement projected on the basis of present consumption for the manufacture of

[3] requirement projected on the basis of present consumption.

PHOSPHORUS : INDIA 1960-75

consumption norms tonnes/tonne	requirement of phosphorus ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
0·047	258	284	338	432
..	30	50	80	120
0·028	.	5	10	17
0·034	52	276	691	1036
..	100	160	260	400
0·1	20	41	102	152
	24	42	75	112
	484	863	1562	2267
	26	50	84	111
	510	910	1640	2380
			1650	2440

lphadiazine, chloroquine etc.

TABLE C 22 : MATERIAL BALANCE:

consuming products	production of consuming products ('000 numbers)			
	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
Tyres :				
1 giant tyres	1004	2050	4700	9400
2 car tyres	379	680	1100	1800
3 motor cycles and scooters .	78	240	850	1600
4 earthmoving equipment, aircraft etc.	50	170	350	500
5 bicycle tyres	12000	30000	35000	50000
Tubes :				
6 giant tubes	1004	2050	4700	9400
7 car tubes	379	680	1100	1800
8 motor cycles and scooters . .	78	240	850	1600
9 earthmoving equipment, aircraft etc.	50	170	350	500
10 bicycle tubes	12000	30000	30000	50000
11 rubber footwear . . .	100	150	225	340
12 other miscellaneous uses . .	100	180	280	400
13 sub-total (1-12) . . .				
14 production reserves of manufacturers (approx. 8% of 13) .				
15 total requirement . . .				
Supply :—				
(1) domestic production—				
natural rubber				
synthetic rubber . .				
reclaimed rubber. .				
(2) imports—				
natural rubber . .				
synthetic rubber . .				
reclaimed rubber. .				

RUBBER : INDIA 1960-75

consumption norms tonnes/'000 nos.	requirement of rubber ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
19	19·0	39·0	89·3	178·6
6	2·3	4·1	6·6	10·8
2·5	0·2	0·6	2·1	4·0
20	1·0	3·4	7·0	10·0
0·62	7·4	18·6	21·7	31·0
3·2	3·2	6·6	15·0	30·1
1·3	0·5	0·9	1·4	2·3
0·4	negl.	0·1	0·3	0·6
3·5	0·2	0·6	1·2	1.8
0·17	2·0	5·1	6·0	8·5
..	8·0	12·0	18·0	27·2
..	14·0	25·0	40·0	57·0
	57·8	116·0	208·6	362·0
	2·2	9·0	16·4	28·0
	60	125	225	390
	25	50	72	82
	..	30	120	250
	..	20	35	55
	23	..	..	..
	9	25	2	3
	3	..	..	..

TABLE C. 23 : MATERIAL BALANCE

	consuming products	production of consuming products ('000 tonnes)			
		1960-61	1965-66	1970-71	1975-76
	1	2	3	4	5
	Styrene for				
1	(*a*) plastics	..	9	50	80
2	(*b*) S.B.R.	..	7·5	7·5	7·5
3	Phenol	..	5	10	20
4	B.H.C.	4	10	20	25
5	D.D.T.	3	3	9	12
6	Detergent alkyates	1·5	8	20	30
7	Maleic anhydride	..	2	5	10
8	Aniline and intermediates	..	8	15	40
9	Caprolactum	..	..	24	40
10	Miscellaneous and solvent uses (10% of 1—9)				
11	Sub-total (1—10)				
12	Addition to stocks (Approx. 5% of 11)				
13	Total requirement				
	Supply :— domestic production :—				
	(*i*) by product of coal carbonization				
	(*ii*) from petroleum				
	(*iii*) from stocks				
	(*iv*) from other sources				
	TOTAL				

NOTE :— [1] could be met by (*i*) Bokaro Ist phase.
(*ii*) Barauni—aromatics.
(*iii*) Recovery of ethyl benzene either at Koyali or Barauni.

BENZENE : INDIA : 1960-75

consumption norms tonnes/tonne	requirement of benzene ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
6	7	8	9	10
0·85	..	8	43	68
0·85	..	6	6	6
1·2	..	6	12	24
0·5	2	5	10	13
0·8	2	2	7	10
0·5	1	4	10	15
1·4	..	3	7	14
0·8	..	6	12	32
1·4	..	..	35	56
	..	4	14	24
	5	44	156	262
	..	3	10	15
	5	47	166	277
	6	33	54	
	..	..	52	
	..	14	..	
	..	..	60[1]	
	6	47	166	277

TABLE C. 24 : MATERIAL BALANCES

Consuming products	Production of consuming products ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
1 Phthalic anhydride	..	10	26	48
2 Naphthole	..	2	3	5
3 Rubber chemicals	2	3	6	10
4 Moth balls	1	1	2	3
5 Miscellaneous (5% of 1-4)	..	..	..	..
6 Total requirement	..	..	..	..
Supply :—				
Domestic production—				
(*i*) naphthalene from steel plants				
(*ii*) naphthalene from Durgapur project				
(*iii*) O-xylene from Koyali				
(*iv*) from othr sources				
total				

NOTE :— (1) may be met from (*i*) Bokaro
(*ii*) Additional-O-xylene production at Barauni

NAPTHALENE / O-XYLENE : INDIA : 1960-75

consumption norms tonnes/tonne	requirement of naphthalene/o-xylene ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
1·2	..	12	31	58
1·1	..	2	3	6
0·3	1	1	2	3
	1	1	2	3
	..	1	2	4
	2	17	40	74
	2	11	11	
	..	1	1	
	..	..	10	
	..	5^1	18^1	
	2	17	40	

TABLE C. 25 : MATERIAL BALANC

consuming products	production of consuming products ('000 tonnes)			
	1964-65	1965-66	1970-71	975-7
(1)	(2)	(3)	(4)	(5)
1 Formaldehyde (excl. Defence)	12	25	65	100
2 Isoprene	..	[illegible]	40	40
3 Methylene chloride	..	2·5	3·5	5
4 Aircraft fuel				
5 Methyl-methacrylate	..	[illegible]	4·0	8·0
6 Miscellaneous[1]				
7 Total requiremen				
Supply :				
Domestic production				
Imports				

NOTE :—

[1] Includes plastics & resins, dyes and intermediates, pesticides, synthetic fibres, m

METHANOL : INDIA : 1964—75

consumption norms tonnes/tonne	requirement of methanol (tonnes)			
	1964-65	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
0·55	6600	13750	35750	55000
0·6	..	..	24000	24000
0·4	..	1000	1400	2000
	1000	1500	2000	3000
0·4	..	..	1600	3200
	1500	3000	7000	10000
	9100	19250	71750	97200
	5000	24000	72000	100000
	4100	..	..	..

cinal etc.

TABLE C. 26—MATERIAL

consuming products	production of consuming products ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
1 alkyd resins	3·5	8	20	30
2 plasticisers (phthalates)	..	4	18	35
3 anthraquinone	..	2·2	3	5
4 benzoic acid	..	2	5	9
5 polyesters	..	0·5	1	3
6 sub-total (1 to 5)	..	..	..	..
7 misc. other uses (approx. 5% of 6)				
8 addition to stocks	..	..	..	..
9 total requirement				
Supply :				
domestic production				
imports				

TABLE C. 27 : MATERIAL BALANCES:

consuming products	production of consuming products ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
1 plastics and resins (using HCHO)	7	17	50	80
2 hexamine	..	1	2	3
3 pentaery thritol	..	2	3	4
4 dyes and intermediates	8	12	14	20
5 synthetic fibres[2]	..	..	10	20
6 medicinal				
7 misc. other uses				
8 total requirement (item 1—7)				
Supply :— domestic production				

NOTES :—
[1] 37 percent.
[2] possible usage in P.V. alcohol fibre plant,
[3] estimated production in 1966.

BALANCES : PHTHALIC ANHYDRIDE : INDIA 1960—75

consumption norms tonnes/tonne	requirement of phtholic anhydride (tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
0·4	1400	3200	8000	12000
0·6	..	2400	10800	21000
0·75	..	1650	2250	3750
0·3	..	600	1500	2700
1·3	..	650	1300	3900
	1400	8500	23850	43350
	100	425	1150	2170
	..	475	1200	2480
	1500	9400	26200	48000
	.. 1500	10000 ..	26200 ..	48000 ..

FORMALDEHYDE[1] : INDIA 1960—75

consumption norms tonnes/tonne	requirement of formaldehyde (tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
0·75	5250	12750	37500	60000
3·5	..	3500	7000	10500
3·0	..	6000	9000	12000
0·125	1000	1500	1750	500
0·5	..	..	5000[2]	10000
	200	500	1000	2000
	500	1000	2000	3000
	6950	25250	63250	100000
	..	25000[3]	65000	100000

TABLE C.28 : MATERIAL BALANCES : CARBON

consuming products	production of consuming products ('000 numbers)			
	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
Tyres :				
1. giant tyres	1004	2050	4700	9400
2. car tyres	379	680	1100	1800
3. motor cycles and scooters	78	240	850	1600
4. bicycles	12000	30000	35000	50000
Tubes :				
5. giant tubes	1004	2050	4700	9400
6. car tubes	379	680	1100	1800
7. motor cycles and scooters	78	240	850	1600
8. bicycles	12000	30000	35000	50000
9. paints and inks[3]	53	102	210	400
10. other uses (5% of 1 to 9)				
11. sub-total (1—10)				
12. reserves with consumers (8% of 11)				
13. total requirement				
Supply :—				
domestic production				
imports				

NOTE :—[1] per million Nos. [2] per tonne. [3] production in thousand tonnes.

TABLE C. 29 : MATERIAL BALANCES : CHEMICAL

consuming products	produticon of consuming products ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
A.—*paper grade pulp*				
1. paper and paper products	364	670	1200	2000
2. other miscellaneous	..	..	..	
3. sub-total (1—2)				
B.—*rayon grade pulp* :				
4. rayon and staple fibre (viscose)	47	100	170	300
5. rayon and staple fibre (acetate)	2·0	12	15	20
6. cellulose film	2·1	10	16	25
7. sub-total (4+5+6)				
Supply :—				
A. paper grade pulp domestic production				
B. chemical wood pulp :—				
(*i*) domestic production				
(*ii*) imports				

NOTE :—[1] Cotton linters only.

LACK : INDIA 1960—75

consumption norms tonnes/000 nos	requirement of carbon black tonnes			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
7·5	7530	15375	35250	70500
2·0	758	1360	2200	3600
1·0	78	240	850	1600
40·0[1]	480	1200	1400	2000
2·0	2008	4100	9400	18800
0·8	303	544	880	1440
0·4	31	96	340	640
12·0[1]	144	360	420	600
0·03[2]	1590	3060	6300	12000
	646	1315	2850	5520
	13568	27650	59890	116700
	1085	2210	4790	9300
	14653	29860	64680	126000
	..	30000	65000	126000
	14200	..	..	

LP INDIA 1960—75

consumption norms tonnes/tonne	requirement of chemical pulp ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
1·05	382	703	1260	2100
	18	45	80	100
	400	748	1340	2200
1·1	52	110	187	330
0·8[1]	2	10	12	16
1·15	2	12	18	29
	56	132	217	375
	400	750	1340	2200
	..	58	200	375
	50	62	..	..

TABLE C. 30 : MATERIAL BALANCES :

steel consuming sector]	net investment (Rs. million)			
	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
A. *Construction* :				
1. agriculture and allied activities (excluding irrigation)	2000	2750	4300	5700
2. minor irrigation	400	900	1200	1800
3. major and medium irrigation .	930	1600	2000	3500
4. power	1180	2650	5750	7500
5. large and medium industries and mining	3200	6750	16000	22000
6. village and small industries .	750	1000	1750	2500
7. transport and communications (excluding roads) . . .	2680	3450	7400	10200
8. roads	500	900	2200	3300
9. health	410	700	1750	2200
10. education	300	600	1400	2000
11. housing and other construction .	2900	3500	7000	1050
12. inventories	1750	2200	4500	6000
13. sub-total : construction . .	17000	27000	55250	772
B.—*Manufacturing* :				
14. transport equipment . . .				
15. electrical equipment ¹ . . .				
16. other metal fabricating industries .				
17. miscellaneous unspecified use . (10% of requirement under B)				
18. soub-total (metal fabricating industries)				
19. maintenance defence etc. . .				
20. stocks : (25% of increased annual production)				
21. exports				
22. total requirement				
23. installed capacity (steel ingots) desired				

steel consumption norms : tonnes per million Rs.	requirement of steel ('000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
10	20	28	43	57
20	8	18	24	36
50	46	80	100	175
150	177	398	862	1125
125	400	1044	2000	2750
75	56	75	131	188
120	322	414	888	1224
80	40	72	176	264
100	41	70	175	220
150	45	90	210	300
120	348	420	840	1260
	1503	2709	5449	7599
	370	947	1534	1990
	22	97	262	397
	1383	2110	4186	6850
	178	315	598	924
	1953	3469	6580	10161
	150	250	550	750
	100	200	500	625
	..	100	500	1500
	3706	6728	13579	20635
	6000	10000	20000	31000

TABLE C. 30(a) :

REQUIREMENTS OF ROLLED MILD STEEL FOR METAL FABRICATING

	Industries	unit of production	production		
			1965-[1] 66	1970-71	1975-76
	(1)	(2)	(3)	(4)	(5)
	Transport Equipment				
1	steam locomotives	Nos.	250	..	..
2	diesel locomotives	„	70	300	325
3	electric locomotives	„	70	150	300
4	wagons	thou. nos.	40	55	60
5	passenger coaches	Nos.	1300	2000	2200
6	cars & jeeps	thou. nos.	35	60	100
7	commercial vehicles . . .	thou. nos.	54	125	175
8	automobile ancillary components and parts including foundry forge .	Rs. million.	200	400	650
9	motor cycles and scooters . .	thou. nos.	50	120	200
10	bicycles complete . . .	thou. nos.	1600	3300	4000
11	ship building	thou. GRT	50	100	200
12	marine diesel engines . . .	thou. H. P.	60	160	200
13	sub-total				
	Electrical Equipment . . .				
14	turbo-generators . . .	thou. Kw.	450	3350	4500
15	electric-motors	„	2065	7500	12500
16	electric transformers . . .	mill. KVA	6·9	20·5	30
17	control gears and switch gears .	Rs. million	150	600	800
18	A.C.S.R. conductors . . .	thou. tonnes	55	100	130
19	electric fans	thous. nos.	2500	4000	5500
20	radio receivers	„	650	2500	4000
21	refrigerators	„	30	100	25
22	air conditioners	„	40	80	13
23	water coolers	„	5	30	5
24	sub-total				
	Other Industrial Machinery—				
25	structural fabrication . . .	thou. tonnes	1000	1980	300
26	gear cutting	„	4	12	1
27	cranes	„	30	100	15
28	ball and roller bearings . . .	mill. nos.	15	40	7
29	precision instruments . . .	Rs. million	80	550	10
30	machine tools	„	250	1000	16
31	diesel engines (stationary) . .	thou. nos.	66	110	14
32	power driven pumps . . .	„	150	250	35
33	air compressors	Rs. million	60	160	2
34	power boilers	tonne st/hr.	2000	8000	140

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norms for rolled steel[2]		total requirement of rolled steel (thousand tonnes)		
tonne/unit of production	source[1]	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
150	C	38	..	..
55	A	4	17	18
95	C	7	14	29
12000	C	480	660	
30	C	57	60	66
1200	C	42	72	120
4000	B	216	500	700
150	B	30	60	98
86	B	4	10	17
20	C	32	66	80
650	B	33	65	130
60	B	4	10	12
		947	1534	1990
9	A	4	30	41
3·5	B	7	26	44
3000	B	21	62	90
45	B	7	27	36
324	B	18	32	42
7	B	18	28	39
3·5	B	2	9	14
145	B	4	15	36
381	B	15	30	50
101	B	1	3	5
		97	262	397
1250	C	1250	2475	3750
n.a.	..	..	..	..
794	B	24	79	119
700	C	11	20	49
1	B	negl.	1	1
45	B	11	45	72
117	B	8	13	16
16	B	2	4	6
50	B	3	8	13
10	C	20	80	140

TABLE C 30 (a)—*contd.*

	Industries	unit of production	production		
			1965-66	1970-71	1975-76
	(1)	(2)	(3)	(4)	(5)
35	industrial boilers	Rs. million	100	250	400
36	chemical machinery etc.	Rs. million.	80	360	900
37	heavy eqpt. and metallurgical machy.	thou. tonnes.	60	140	200
38	coal and other mining machinery	,,	15	65	90
39	cotton textile machinery	Rs. million	200	400	500
40	cement machinery	Rs. million.	45	150	250
41	sugar machinery	,,	120	200	250
42	paper machinery	,,	70	160	250
43	printing machinery	,,	5	80	180
44	jute textile machinery	,,	27	35	40
45	daïry machinery	,,	25	50	90
46	tea processing machinery	,,	23	45	60
47	construction machinery	,,	40	75	150
48	crawler tractors	nos.	500	1000	1300
49	dumpers and scrapers	,,	5000	1000	1300
50	shovels	,,	100	200	300
51	road rollers	,,	900	1200	2000
52	tractors	thou-nos.	10	50	150
43	tractor implements	..	..	..	..
54	agricultural implements	thou. tonnes	535	850	1200
55	type writers	thou. nos.	68	120	180
56	sewing machines.	,,	600	1100	1800
57	containers and drums including buckets	..	..	..	..
58	industrial fasteners	thou. tonnes	200	350	500
59	padlock industry	Rs. million	50	80	100
60	wood screws, wire nails, bolts, nuts etc.	thou. tonnes.	230	370	500
61	welding electrodes	mill. metres.	274	550	800
62	steel furniture	thou. tonnes.	50	80	120
63	steel pipes and tubes	thou. tonnes.	457	1000	1600
64	wire ropes	thou. tonnes.	5	10	16
65	hurricane lanterns	mill. nos.	7·5	8	10
66	razor blades	,,	700	1000	2000
67	barbed wire	..	..	..	..
68	enamel ware	mill. nos.	30	60	90
69	sub-total				
70	Grand Total				
	Total (excl. structural fabrication)[2]				

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[1]A: PP. Division B : NCAER C : Bokaro Project Report

[2]included in coustruction sector.

norms for rolled steel[2]		total requirement of rolled steel (thousand tonnes)		
tonne/unit of production	source[1]	1965-66	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)
300	B	30	75	120
385	B	31	139	347
550	C	33	77	110
750	C	11	49	68
135	B	27	54	68
115	B	5	17	29
87	B	10	17	22
50	B	4	8	18
50	B	negl.	4	9
61	B	2	2	2
22	B	1	1	2
190	B	4	9	11
220	B	9	17	33
9	C	5	9	12
7	C	4	7	9
21	C	2	4	6
6	C	5	7	12
890	B	9	45	134
..	C	40	200	600
190	C	102	162	228
18	B	1	2	3
8	C	5	9	14
..	C	475	750	1200
1180	C	236	413	590
240	C	12	19	24
1200	C	276	444	600
125	B	34	69	100
1200	B	60	96	144
1000	C	467	1000	1600
1000	B	5	10	16
1000	B	8	8	10
1·2	B	1	1	2
..	C	100	150	210
900	B	27	54	81
		3360	6661	10600
		4404	8487	12987
		3154	5982	9237

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[2] only mild rolled steel excluding electrical sheets, iron cutting tools and spring steels.

TABLE C.31 : MATERIAL BALANCES : ALUMINIUM

	consuming products]		production of consuming products			
		unit	1960-61	1965-66	1970-71	1975-76
	(1)	(2)	(3)	(4)	(5)	(6)
A.1	automobiles	'000 nos.	53	90	185	275
2	railway coaches	nos.	1210	1300	1900	2000
3	other transport eqpt. (ships, locomotives & trailers etc.) . .	'000 tonnes steel	86	150	300	500
4	A.A. conductors[3]	'000 tonnes	..	10	20	25
5	A.C.S.R.	„	23	55	100	130
6	electric motors	000 kw.	540	2100	7500	12500
7	fans	000 nos.	1060	2500	4000	5500
8	refrigeration machinery . .	Rs. million	25	150	250	500
9	other electric manufacturs (control gear & switchgear etc.) . .	„	40	150	600	800
10	radio and related products. .	000 nos.	270	650	2500	4000
11	telephone & telegraphic eqpt. .	tonnes steel.	3000	5000	9000	15000
12	food products machinery .	000 tonnes	10	35	50	75
13	textile machinery . .	„	18	40	90	140
14	chemical and pharmaceutical machinery[4]	Rs. million	20	90	450	700
15	internal combustion engines .	000 nos.	42	66	110	140
16	furniture and fixtures . .	000 tonnes]	26	70	110	200
17	canning and packing[5] . .					
18	building construction[6] .					
19	domestic utensils & other commercial supplies[7] . . .					
20	sub-total (A)					
B.21	estimated substitution of copper by aluminium for bare copper conductors[8] . . .	tonnes		5000	20000	3000
22	PVC and VIR cables[9] . .	mill. metres ..	(200)	550 (600)	1400	1000 (2000
23	paper insulated wires and cables .	kilo metres ..	(1600)	7200 (4000)	14000 (4000)	2000
24	sub-total (B)					
25	total—(A+B)					
26	miscellaneous other uses (approximately 5% of 25) . . .					
27	production reserves for consumers .					
28	addition to stocks (5% of production)					
29	defence and ordnance requirements					
30	exports					
31	total requirement . .					

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consumption norms tonnes/unit	requirement of aluminium (000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(7)	(8)	(9)	(10)	(11)
30-50-60[1]	1·59	5·40	11·10	16·50
0·3	0·36	0·39	0·57	0·60
0·01	0·86	1·50	3	5
1000	..	10	20	25
700	16·10	38·50	70	91
0·17	0·09	0·36	1·27	2·13
0·35	0·37	0·87	1·40	1·92
6	0·15	0·90	1·50	3
5-6[2]	0·20	0·90	3·60	4·80
0·5	0·14	0·32	1·25	2
0·03-0·05	0·09	0·25	0·45	0·75
24	0·24	0·84	1·20	1·80
24	0·43	0·96	2·16	3·36
5	0·10	0·45	2·25	3·50
40	1·68	2·64	4·40	5·60
28	0·73	1·96	3·08	5·60
	4	7·50	15	25
	3	4·70	7	10
	10	15·60	28	45
	40·13	94·04	177·23	252·56
	..	2·75	11	16·50
	..	2·95	8·80	14·70
	..	1·88	3·44	3·44
	..	7·58	23·24	34·64
	40·13	101·62	200·47	287·20
	1·98	4·60	10·14	16·30
	3·09	5	16·05	23·30
	0·80	4	12·34	20·20
	..	5	10	15
	..	..	10	25
	46	120	259	387

TABLE C.31 MATERIAL BALANCES :

consuming prodncts	production of consuming products				
	unit	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)	(6)
Supply :—					
domestic production					
estimated availability of secondary scrap					
imports					

NOTES :—figures in brackets indicate the extent of substitution by aluminium.

[1] 'Norms' of aluminium consumption assumed to rise from 30 to 60 tonnes by 1970-71 in view

[2] Data for 1960-61 incuded in ACSR.

[3] 20% increase in the use of aluminium for switch gear construction assumed for 1965-6

[4] Excluding fertiliezer plants.

[5] Estimated by "Development Council for Non-ferrous Metals".

[6] Related to estimated steel consumption for construction.

[7] As sumed to increase by 10 per cent per annum, 5 per cent normal growth plus, 5% for coppe

[1] Replacement equivalent weight of aluminium is 55% of copper for comparable electrical

[9] Heavier sizes only.

ALUMINIUM : INDIA 1960-75—*contd.*

consumption norms tonnes/unit	requirement of aluminium (000 tonnes)			
	1960-61	1965-66	1970-71	1975-76
(7)	(8)	(9)	(10)	(11)
	17·25	70	240	360
	5	12	20	30
	23·50	38	..	..

of the anticipated increased use of aluminium in the automobile industry.

and 1970-71 .

replacement.
resistivity.

TABLE C. 32: MATERIAL BALANCES : COPPER :

consuming industry/product	production of		
	unit	1960-61	1965-66
(1)	(2)	(3)	(4)
A Electricals :			
1. (*i*) electric motors (150 Kw & below)[1]	'000 Kw	540	1865
2. (*ii*) electric motors (above 150 Kw)	,,	. .	200
3. transformers	'000 KVA	1283	7000
4. bare copper conductors[2] . .	tonnes	9947	10000
5. PVC and VIR cables . .	mill. metres	195	(350) 550
6. paper insulated wires and cables.	kilo-metres	992	(5600) 7200
7. electric fans	'000 nos.	1060	2500
8. switch gear and electric control gear[3]	Rs. million	40	150
9. refrigerators and air conditioners	,,	25	150
10. telephone & telegraphic equipment	tonnes steel	3000	5000
11. sub-total (A)			
B. Non-Electricals :			
12. automobiles	nos.	53000	90000
13. locomotives	,,	272	340
14. food products machinery . .	tonnes	10000	35000
15 hardware fittings	,,	7600	12000
16. pumps and compressors .	'000 nos.	106	200
17. non-ferrous metal alloys (anti-friction bearing metal bronze, gunmetal solder etc.)[4] . .	tonnes	21500	28000
18. chemical industries equipment .	Rs. million	20	90
19. diesel engines	'000 nos.	43	66
20. metal powders for use in chemical industry etc. . .			
21. small-scale industries including utensil manufacturing .			
22. sub-total (B)			
23. total consumption (A+B) .			
24. miscellaneous uses (6% of 23)[5]			
25. consumption all industries (23 +24)			
26. production reserves of consumers (8% of 25 approx. one month's stock)			
27. requirements for repairs and maintenance jobs . .			
28. increase in incomplete production			
29. total requirement . . .			

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consuming products		consumption norms tonnes/unit	requirement of copper ('000 tonnes)			
1970-71	1975-76		1960-61	1965-66	1970-71	1975-76
(5)	(6)	(7)	(8)	(9)	(10)	(11)
6000	10000	2·4— 1·06	1·30	3·97	9·60	16
1500	2500	0·83	..	0·17	1·25	2·08
20000	30000	1·90	2·44	13·30	38	57
5000	5000	1·00	9·95	10	5	5
(800) 1400	(1000) 2000	29	5·66	10·15	23·20	29·
(10000) 14000	(16000) 20000	1·56	1·55	8·74	15·60	24·96
4000	5500	2·50	2·65	6·25	10	13·75
600	800	12·0—9·6	0·48	1·62	5·76	7·68
250	500	6	0·15	0·90	1·50	3
9000	15000	0·21	0·63	1·05	1·89	3·15
			24·81	56·15	111·80	161·62
185000	275000	0·05	2·65	4·50	9·25	13·75
450	625	2·50	0·68	0 ·85	1·13	1·56
50000	75000	0·05	0·50	1·75	2·5	3·75
20000	30000	0·45	3·42	5·40	9	13·50
400	700	4	0·42	0·80	1·60	2·80
36000	45000	0·75	16·13	21	27	33·75
450	700	10·00	0·20	0·90	4·50	7
110	140	90	3·87	5·94	9·90	12·60
			0·50	1	1·50	2
			12·00	18·24	23·28	28·40
			40·37	60·38	89·66	119·11
			65·18	116·53	201·46	280·73
			3·91	6·99	12·09	16·84
			69·09	123·52	213·55	297·57
			5·66	9·68	19	24
			0·80	1·30	2·72	4·21
			0·80	1·30	2·73	4·22
			76·35	135·80	238	330

TABLE C.32 :—*contd.*

consuming industry/product	production of		
	unit	1960-61	1965-66
(1)	(2)	(3)	(4)
Supply :			
domestic production of copper .			
estimated availability of scrap (approx. 10% of consumption all industries)			
imports (copper and copper content of imported copper alloys). . .			

Figures within brackets indicate the quantities where copper will be used, the balance

NOTES.— [1]production data from the development council for heavy electrical industri
20,000 tonnes by 1970-71 and 30,000 tonnes by 1975-76.

[3]Replacement of CU by Al. in switch gear construction assumed @

[4]Required for railway equipment, defence, coinage bearings etc.

[5]Domestic electrical appliances, press buttons, torch light cases, fountain

consuming products		consumption norms	requirement of copper ('000 tonnes)			
1970-71	1975-76	tonnes/unit	1960-61	1965-66	1970-71	1975-76
(5)	(6)	(7)	(8)	(9)	(10)	(11)
			8·90	36	70	100
			7·10	14	23	30
			61·80	85	147	200

bstituted by aluminium.

ssumed replacement of bare copper conductors—5000 tonnes by 1965-66

y 1965-66 and 20% by 1970-71 and 1975-76.

rts, ball bearing etc.

TABLE C.33. MATERIAL BALANC

consuming products		production of consuming	
	unit	1960-61	1965-65
(1)	(2)	(3)	(4)
1. storage batteries	'000 nos.	650*	800
2. electric cables	kilometres	916*	1014
3. pigments and compounds	'000 tonnes	65*	14
4. chemical plant and equipment	„	5	20
5. construction			
6. printing metal and alloys	'000 tonnes	370	820
7. other uses (10% of 1—6)			
8. sub-total (1—7)			
9. stock and reserves of consumers (8% of 7 + 8)			
10. total requirement			

Supply :

domestic production

estimated availability of secondary scrap

imports

NOTES.—*Including production from small scale sector

EAD : INDIA 1960-75.

products		consumption norms tonnes/unit	requirement of lead (000 tonnes)			
1970-71	1975-76		1960-61	1965-66	1970-71	1975-76
(5)	(6)	(7)	(8)	(9)	(10)	(11)
1800	3000	17	11·1	13·6	30·6	51
32600	40000	1·5	1·4	15·2	48·9	60
210	400	100	6·5	14·2	21	40·0
100	160	80	0·4	1·6	8	12·8
			0·5	0·8	2·6	5·5
1200	2100	10	3·7	8·2	12·0	21·0
			2·4	5·6	12·3	19·0
			26·0	59·2	135·4	209·3
			2·0	4·8	10·6	16·7
			28	64	146	226
			3·7	9	25	50
			2·0	6	15	21
			25·0	50	106	155

TABLE C.34

OMESTIC SUPPLY AND IMPORTS OF MACHINERY AND COMPONENTS, INDIA
1965-66, 1970-71 & 1975-76

(Rs. millions)

	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)
Domestic production :			
total gross, output *ex*-factory	11155	28093	43601
of which capital goods (K)	6814	17181	26443
consumer goods (C)	1681	3728	6275
intermediate goods (I)	2660	7184	10883
Export.	229	1390	2600
of which capital goods (K)	87	464	1000
Domestic Supply.			
capital good *ex*-factory	6727	16717	25443
Demand			
total value as installed (40 per cent. of gross investment)	14000	25200	37200
less margin of 25 per cent. for trade transport and installation charges	3500	6300	9300
capital goods required *ex*-factory	10500	18900	27900
Imports :			
whole equipment : (9)—(6)	3773	2183	2457
parts and components (20 per cent. of capital and consumer goods produced in 1965-66, the percentage falling by 1 per cent per year upto 1975-76)	1699	3136	3273
total imports	5472	5319	5730
Gross investment (Rs. thousand million)	35	63	93

Source : Perspective Planning Division Studies, April, 1964.

TABLE C. 35 : MATERIAL BALANC

sl. no.	consuming sectors	production of co-	
		unit	1965-
	1	2	3
1	Iron and Steel		
	L. D. process		
2	constructional (new)	mill. tonnes	0·1
3	operational	mill. tonnes	1·8
	Steel other than L. D. process		
4	constructional (new)	mill tonnes	0·44
5	operational	mill. tonnes	6·2
	Foundry pig iron		
6	constructional (new)	mill. tonnes	0·2
7	operational	mill. tonnes	1·5
8	constructional replacement 20% of (2+4+6)		
9	Glass industry		
10	constructional (new)	'000 tonnes	22
11	operational	'000 tonnes	500
12	constructional replacement (40% of 10)		
13	Ceramic industry		
14	constructional (new)	'000 tonnes	27
15	operational	'000 tonnes	19
16	constructional replacement (30% of 14)		
17	Cement industry		
18	constructional (new)	'000 tonnes	110
19	operational	'000 tonnes	1100
20	constructional replacement (30% of 18)		
21	Refractory industry		
22	constructional (new)	'000 tonnes	8
23	operational	'000 tonnes	9
24	constructional replacement (30% of 22)		
25	Railways		
26	Miscellaneous		
27	sub-total		
28	Requirement of fire cement & mortars (10% of 27)		
29	TOTAL		

REFRACTORIES—INDIA, 1965-66—1975-76

uming products (for calculation)		consumption norms tonnes/unit	requirement of refractories ('000 tonnes)		
1970-71	1975-76		1965-66	1970-71	1975-76
4	5	6	7	8	9
..	..	..	459	1017	1649
1·57	1·96	60,000	10	94	118
7·65	17·44	60,000	108	459	1046
0·43	0·17	100,000	44	43	17
8·35	9·22	45,000	279	376	415
0·50	0·50	10,000	2	5	5
4	6·50	3,000	5	12	20
			11	28	28
			29	60	53
100	10	150	3	15	2
770	1000	50	25	39	50
			1	6	1
			12	20	35
46	78	200	5		16
329	567	25	5	8	14
			2	3	5
			30	75	96
3000	3300	12	13	36	40
23000	36700	1·2	13	28	44
			4	11	12
			39	82	127
230	330	134	11	31	44
1561	2620	27	25	42	70
			3	9	13
			31	52	74
			160	320	640
			760	1626	2674
			76	163	267
			836	1789	2941

APPENDIX D: Transportation Requirements: India 1960-61 to 1975-76

Statement D.1 and D.2 give estimates of demand for transport; and statements D.3 and D.4 provide a distribution between different modes of transport; statement D.5 and D.6 give an estimate of rolling stock requirements. A few supplementary comments are added by way of explanation of concepts and methods used in preparing the statements.

I Demand for Transport (D.1 and D.2)

Goods traffic: For purposes of projection of traffic requirements, the total freight traffic has been divided into two categories 'long-distance' and 'feeder and local traffic'. Long-distance traffic refers to the type of traffic carried by the Railways during the First Plan period. It includes all traffic carried by the railways and coastal shipping; a part of traffic carried by motor transport with a lead over 100 kilometres: bulk movements by river. All other traffic is included under feeder and local traffic.

The method used for the projection of the long-term long-distance traffic demand is the projection of the historic production—movement ratio (transport co-efficient) of important individual commodity-groups, corrected for known and anticipated changes in the processes of production and distribution. Traffic in 17 major commodity-groups, forming 65 per cent of total traffic, has been estimated accordingly. Food grains movement is taken to increase in proportion to the increase in urban consumption. Traffic in railway materials is as indicated by the Railway Board. Traffic in miscellaneous commodities is taken to be 25 to 30 per cent of traffic in all other commodities, in the light of past experience.

Feeder and local traffic is estimated on the basis of its relationship with long-distance traffic, as found from data for the past decade. Accordingly, it is assumed that per tonne of long-distance traffic, the requirement of feeder and local traffic will amount to 70 tonne miles.

Average lead of long-distance traffic is taken as 360 miles. The lead has, no doubt, been increasing in the past. This trend is likely to be arrested in future. The proportion of short-lead traffic in total traffic is expected to increase in future and also on account of greater dispersal of economic activity, for certain commodities such as cement, fertilizers the lead will be reduced. On the other hand there will be certain factors operating in the reverse direction with greater integration of the national market. For purposes of present estimates, the lead has been kept constant. An indication regarding the likely lead of traffic on railways is given in Table D.4.

Passenger traffic.—Rail passenger traffic is assumed to increase in future at the same rate as in the past and accordingly a provision for 25 per cent increase in traffic per plan-period has been made. Bus-traffic is taken to increase by about 10 per cent per annum during 1965-75 period as against about 8 per cent per annum in the last decade, to allow for increased rate of growth of population and per capita income.

Rate of growth of traffic.—The rate of growth of freight traffic during 1960—75 period is estimated at 10-11 per cent per annum as against 7-8 per cent during 1955—60 period. The passenger traffic will increase at a rate of 6-7 per cent per annum as against 5-6 per cent in the past.

II. Share of each means of transport in the carriage of total goods traffic—(D. 3)

This has been determined keeping in view the objective of enabling each transportation agency to carry those categories of traffic for which it is more economic and suitable. It is accordingly assumed that impediments to the proper growth of motor transportation will be removed and necessary incentives provided to foster its growth to an appropriate level. Development of motor transport here-after will, therefore, be at a much faster rate than the Railways. Railways will concentrate mainly on the carriage of commodities moving in substantial quantities (train loads), heavy merchandize like iron and steel, and goods travelling over *very long* distances. In respect of other categories of traffic, their share will be progressively reduced. Most of the non-bulk traffic moving upto a distance of 300 kilometres will be catered for by motor transport. Its share in each plan-period is, however, taken to be limited by the feasibility of improving the road net-work suitably and expanding automobile production as well as the ability of motor operators to organise the necessary services.

Any elaborate allocation of traffic to different means of transport is not possible at this stage due to serious inadequacy of relevant data. But an approximate estimate has been made on the basis of available information regarding the types of traffic carried at present by each agency, the recent shift of certain classes of traffic from one agency to another, relative cost of carriage by different transportation agencies, origin-destination studies of future traffic flows, and experience of advanced foreign countries. Underlying assumptions in this regard are stated below:

1. Long-distance traffic:

1. *Coal.*—Railways will continue to carry most of the traffic originating in coal. Share of motor transport will be limited to a small proportion, representing small-quantities short-distance (upto 200 kilometres) movements.

2. *Iron & manganese ores.*—Railways will cater for a major portion of this traffic. But, a few specific movements (such as iron ore for export from Paradip port and Goa mines) will be by other means of transport.

3. *Iron and steel.*—This heavy merchandise will go by rail to a large extent. However, about 10 to 15 per cent of it is small-quantity moderate distance traffic, which will move by trucks.

4. *Cement, Fertilizers, sugar and gur and petroleum products.*—A part of this traffic consists of bulk movements from production centres to wholesale distributors, and will, therefore, move by rail. Out of the remaining traffic, consignments travelling upto a distance of 300 kilometres will go mostly by road.

5. *Food grains and commercial crops.*—Motor transport is capable of offering competition to railways in this field. But, as railways are offering special facilities for their carriage, they may be able to retain a large part of this traffic. The share of motor transport will, however, gradually increase in each plan-period.

6. *Railway materials.*—All of this traffic will be carried by railways as it will be convenient to them.

7. *Limestone and building materials.*— Railways will cater only for long distance bulk movements and all other movements will be by other means of transport.

8. *Miscellaneous commodities.*—Railways' share in this traffic will be progressively reduced, as motor transport is more suitable for the carriage of a large part of such goods.

2. Feeder and local traffic

This is carried by motor transport, bullock carts and inland water transport. The capacity of the latter two agencies can be increased only marginally and motor transport will be carrying most of the additional traffic.

III. Rolling stock requirements (D. 5 and D. 6)

The requirement of additional rolling stock for motor transport and railways has been worked out by dividing the total volume of additional traffic generated during a plan-period by the average performance of a unit of rolling stock per annum. The 'norms' regarding the performance of a unit has been prepared by taking into consideration the present performance and allowing for future improvement in utilization where necessary.

Motor transport

(a) *Long-distance goods transport.*—A truck is assumed to have a net capacity of 8 tons and run about 35,000 miles with 70 per cent load factor. Average annual performance of a truck will thus be about 2,00,000 tonne-miles.

(b) *Feeder and Local goods traffic.*—The volume of traffic carried by a truck is taken as 65,000 tonne-miles per annum.

(c) *Passenger-traffic.*—The average annual performance of a passenger bus is taken as 6,50,000 passenger-miles.

Railways:

(a) *Electric locomotives.*—Average volume of traffic carried per annum by a BG haulage locomotive is taken as 55 million tonne -miles in case of goods traffic and 32 million passenger-miles in case of passenger traffic. No shunters have been provided.

(b) *Diesel locomotives.*—Average volume of traffic carried annually by a locomotive (all gauges) is taken as 27 million tonne-miles. All additional requirement for shunting will be met through diesel shunters, whose number is placed at about 10 per cent of total stock added during a plan-period.

(c) *Other stock.*—The average annual performance is taken at 3,00,000 onne-miles per wagon, 6·3 million tonne-miles per electric multiple nit and 2·1 million passenger-miles per passenger carriage. Requirement of other coaching stock is assumed to be 30 per cent of stock of assenger carriages.

Replacement requirements have been estimated at a higher rate than n the past, the objective being the elimination of most of the over-aged tock by 1975-76.

An important assumption underlying the estimation of railway roling stock is that most of the additional traffic generated will be catered or by diesel and electric traction and a large part of movement will be hrough heavy-load, higher-speed box-wagon trains. In the case of otor transport, utilization of higher capacity vehicles, including truckailers, has been assumed.

TABLE D. 1 : ESTIMATES OF VOLUME OF TRAFFIC TO BE CARRIED

		unit	1960-61 rail-ways	 other means of transport	 Tot
	(1)	(2)	(3)	(4)	(5)
	A. ***Goods transport :*** *long-distance traffic tonnes originating*				
1	minerals	mill. tonnes	67	3	70
2	agricultural produce . . .	„	19	3	22
3	major finished products . . .	„	23	4	27
4	miscellaneous commodities .	„	47	7	54
5	total	„	156	17	173
6	average lead of traffic . . .	miles	350	330	350
7		(kilometres)	(563)	(531)	(563)
8	volume of long-distance traffic .	billion tonne-miles	54	6	60
9		tonne (kilometres)	(88)	(9)	(97)
10	feeder of local traffic . . .	„	..	12	12
11			..	(19)	(19)
12	total volume of goods traffic . .	„	54	18	72
13			(88)	(28)	(116)
14	index of growth of goods traffic with 1960-61=100 for each column .		..	..	..
	B. *Passenger transport*				
15	volume of passenger traffic .	billion passenger-miles	48	36	84
16		(Passenger-kilo-metres)	(77)	(58)	(135)
17	index of growth of passenger traffic with 1960-61=100 for each column.		..	..	..

RAILWAYS AND OTHER MEANS OF TRANSPORT, INDIA 1960-61 TO 1975-76.

1965-66			1970-71			1975-76		
railways	other means of transport	total	railways	other means of transport	total	railways	other means of transport	total
(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
123	7	130	204	24	228	303	41	344
24	6	30	31	11	42	38	17	55
37	9	46	60	20	80	88	42	130
61	18	79	90	35	125	111	80	191
245	40	285	385	90	475	540	180	720
365	330	360	365	340	360	365	345	360
(587)	(531)	(579)	(587)	(547)	(579)	(587)	(555)	(579)
89	13	102	140	31	171	198	62	260
(144)	(21)	(165)	(226)	(49)	(275)	(318)	(100)	(418)
..	20	20	..	33	33	..	51	51
..	(32)	(32)	..	(53)	(53)	..	(82)	(82)
89	33	122	140	64	204	198	113	311
(144)	(53)	(197)	(226)	(102)	(328)	(318)	(182)	(500)
165	183	169	259	356	283	367	627	432
60	54	114	75	87	162	94	141	235
(97)	(87)	(184)	(121)	(140)	(261)	(151)	(227)	378
125	150	135	154	242	193	196	389	279

TABLE D.2 : VOLUME OF GOODS TRAFFIC—INDIA 1970-71—1975-76

(A) *Volume of long-distance traffic*

		transport coefficient (%)	1970-71		1975-76	
			production	volume of traffic	production	volume of traffic
	(1)	(2)	(3)	(4)	(5)	(6)
				(million tonnes)		
	I—*Minerals*					
1	coal	95	140	133	210	199·5
2	iron ore	100	60	60	90	90
3	manganese ore	100	3	3	3	4
4	limestone/dolomite	45	53·6	24·1	89	40·1
5	salt	70	7·3	5·1	10·5	7·4
6	other ores	50	12	6	20	10
7	total		275·9	231·2	423·5	351
	II—*Agricultural produce*					
8	good grains		125	23	160	29
9	sugarcane	4	140	5·6	200	8
10	oilseeds	30	12	3·6	17	5·1
11	law cotton and jute	90	3·2	2·9	5·8	5·2
12	total		280·2	35·1	382·8	47·3
	III—*Major finished products*					
13	iron and steel	200	15·5	31	28·6	57·2
14	cement	80	23	18·4	36	28·8
15	petroleum products	65	27	17·6	42	21
16	fertilizers	50	10·6	5·3	20·5	10·3
17	sugar	80	5	4	8·3	6·6
18	textiles	50	3·7	1·8	5·7	2·9
19	paper and newsprint	95	1·5	1·4	2·6	2·5
20	tea and coffee	95	0·5	0·5	0·7	0·7
21	total		86·8	180	144·4	130
22	IV Railway materials (excluding coal)			23		28
23	sub-total			369·3		556·3
24	V. Miscellaneous commodities (25% to 30% of I to IV)			105·7		163·7
25	VI Grand total : long distance traffic			475		720

(B) *Total volume of traffic*

		1970-71	1975-76
	I. *Long-distance traffic*		
1	tonnes originating (million tonnes)	475	720
2	average lead of traffic (miles)	360	360
3	volume of traffic (billion tonne-miles)	171	260
4	II feeder & local traffic (billion tonne-miles) (at 70 tonne-miles per-tone of long-distance traffic)	34	51
5	III total volume of traffic (billion tonne-miles)	204	311
6	(billion tonne-kilometres).	328	500

ABLE D. 3 : DISTRIBUTION OF GOODS TRAFFIC BETWEEN DIFFERENT EANS OF TRANSPORT—INDIA 1970-71

commodity-group	volume of traffic	traffic by railways	traffic by motor transport	traffic by other means	per cent share of railways in total traffic
(1)	(2)	(3)	(4)	(5)	(6)
	1. In million tonne originating				
Long distance traffic ,					
1 coal	133	126	3—4	3—4	95
2 iron, manganese and other ores	71	59	4	8	80
3 cement, lime stone and building materials	68	50—51	116—17	1	70—75
4 foodgrains, sugarcane, raw cotton and jute and fruits/vegetables	42	28—31	10—13	1	75—80
5 iron and steel	31	27—28	3—4	..	85—90
6 petroleum products	18	14	2—3	1—2	75
7 fertilizers	5	3	2	..	60
8 railway materials	23	23	..	..	100
9 sugar & gur	7	3—4	3—4	..	50—60
10 other commoditie	77	45—50	25—30	2—3	60—65
11 total	475	378—389	68—81	16—19	78—81
		385	70—75	15—20	81
12 average lead of tra[illegible]	360	365	275 to 300	500 to 600	
			2. In billion tonne miles (t.m.) tonne-kilometer (t.k.m.)		
Volume of long distance traffic					
3 t. m.	171	140	21	10	82
4 t. km.	(275)	(226)	(33)	(16)	..
Feeder & local traffic					
15 t. m.	33	..	29	4	..
16 t. km.	(53)	..	(47)	(6)	..
Total volume of traffic :					
7 t. m.	204	140	50	14	69
8 t. k n	(328)	(226)	(80)	(22)	..

TABLE D. 4: AVERAGE LEAD OF TRAFFIC ON RAILWAYS AND VOLUME OF RAIL TRAFFIC—INDIA 1970-71

		million tonnes	average lead mile	million tonne-mi
	(1)	(2)	(3)	(4
	Coal:			
1	to washeries	13	20	26
2	to steel plants/cokeries	26	225	, 8
3	to railways	22	440	9'68
4	to other consumers*	65	465 to 485	30,22 to 31,52
5	sub-total	126	365 to 376	46,01 to 47,31
	Steel plant traffic:			
6	raw materials (excluding coal)	51	135	6,88
7	finished products*	17	600 to 630	10,20 to 10,71
8	sub-total.	68	251 to 259	17,08 to 17,59
9	cement	12	330	3,96
10	iron ore for export	18	275	4,95
11	railway materials	23	65	1,49
12	other commodities*	138	450 to 470	62,10 to 64,86
13	total	385	352 to 364	135,60 to 140,17

NOTE: Excepting items marked *, average lead of traffic taken represents actual lead expe in 1970-71 as approximately estimated on the basis of partial studies regarding origin/destina of major traffic flows conducted by the World Bank Team on coal transport, Joint Technical Gro on transport planning and Perspective Planning Division.

*Average lead assumed to increase by 10 to 15% in respect of coal to 'other consumers' 'other commodities' and by 5 to 10 per cent in respect of 'finished products from steel plants'.

TABLE D. 4: ROLLING STOCK IN SERVICE—INDIA 1960-61—1975-76

	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
A) *Railways* :				
Locomotives :				
1 steam	10,300	10,900	10,000	9,000
2 diesel	186	745	1,900	3,350
3 electric	131	447	1,050	2,150
Wagons :				
4 (in terms of 4-wheelers)	341,000	467,000	627,000	827,000
Coaching Stock :				
5 passenger carriages	20,600	24,200	29,200	35,400
6 other coaching vehicles	6,400	7,500	9,000	10,900
7 E.M.U. stock	800	1,700	2,400	3,400
8 rail-cars	100	300	500	800
B) *Commercial Motor Transport* :				
9 goods trucks (000)	170	280	550	950
10 passenger buses (000)	58	80	130	210
11 *total* (000)	228	360	680	1,160

TABLE D. 6 : ROLLING STOCK REQUIREMENTS DURING FOURTH AND FIFT PLAN-PERIODS

	Fourth Plan			Fifth Plan		
	net addition	replace-ment	total	net addition	replace-ment	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(A) *Railways* :						
Locomotives :						
1 steam . . .	..	700	700	..	..	..
2 diesel . . .	1000	150	1150	1150	350	1500
3 electric . .	600	..	600	1100	50	1150
Wagons :						
4 (in terms of 4-wheelers) . .	160000	55000	215000	200000	90000	29000
Coaching Stock :						
5 passenger carriages	5000	3000	9500	6200	1600	9700
6 other coaching vehicles . .	1500			1900		
7 EMU stock . .	700	150	1050	1000	150	1450
8 rail cars . .	200			300		
(B) *Commerciaj Motor Transport* :						
9 goods trucks (000)	270	70	340	400	200	600
10 passenger buses (000)	50	30	80	80	50	130
11 total (000)	320	100	420	480	250	730

APPENDIX E

INDIA'S EXPORT EARNINGS ESTIMATES FOR 1970-71 AND 1975-76.

Statement E presents the prospects for Indian exports during each year of the Fourth Plan as well as a necessary crude estimate for 1975-76. The attempt is to indicate broadly the possible level of export earnings that can be hoped for by 1970-71 and 1975-76. In preparing the estimates use has been made of material available from the following sources:—

1. Projections for ten principal agricultural exports prepared by the Indo-Japanese Committee, at the Indian Statistical Institute.
2. Professor Man Mohan Singh's articles in the Economic Weekly Special Number of 1963.
3. Estimates of the Perspective Planning Division.
4. Estimates made by the Board of Trade and Technical Development Sections' estimates.

In the case of certain commodities which appeared to have a larger export potential than envisaged by the above sources suitable modifications have been made.

The estimates are both in the nature of projections and targets of exports. They indicate in quantitative terms what could be reasonably aimed at, but it would be wrong to think that these levels of exports could be reached without very active and determined efforts. The programme of production is however well oriented to supply the needed commodities for exports. Indeed the strategy of import substitution accompanied by an active drive to expand exports, which characterises the programme of development as contemplated for 1965—75, aims at ensuring a balance in Indian's foreign trade accounts by 1975-76 without depending on any special foreign aid.

In arriving at the estimates for the end year 1970-71 the possible quantity of goods that could be exported has been first arrived at and valued at the prices prevailing over the period 1961-62 and 1962-63. However in certain cases the value figures had to be arrived at by considering the value of total output that would be forthcoming by 1970-71. The estimates for the intervening years between 1961-62 and 1970-71 have been arrived at by linearly interpolating the rates of growth estimated to prevail in the case of each commodity over the period 1961-62 to 1970-71. Commodities for which no earlier estimates were available have been grouped under the head miscellaneous items. This group includes items like dairy products, cereals, waste paper and pulp etc. In the case of these commodities it is assumed that their value of earnings would remain constant at the 1962-63 level over the projected period.

The 1975-76 estimates have been arrived at by examining the past trends in earnings, rates of growth estimated to prevail over the period

1961-62 to 1970-71, and the estimates of production and domestic demand prepared by the Perspective Planning Division. These figures indicate the avenues in which exports can be furthered and represent only the possible level of earnings that can be hoped for by 1975-76.

Agriculture and Animal based exports

This group of items with a share of 76 per cent in the total export earnings were contributing around Rs. 509 crores in the year 1961-62. The earnings from this group of items is estimated to increase to Rs. 722 crores by 1970-71, with a share of around 59 per cent in the total export earnings estimated at Rs. 1225 crores. It is expected that by 1975-76 the earnings from this group would further increase to Rs. 863 crores and they would still account for more than half of total earnings estimated at Rs. 1624 crores.

The major items in this group of exports are jute fabrics, tea, fruits and vegetables, oil cakes, fish and fish preparations, cotton textiles, vegetable oils and sugar. In the case of all these commodities both World demand and India's exports have been showing an upward trend. The estimates for these commodities have been arrived at after examining the past trends in their exports and the future prospects of World demand as outlined by the international agencies like the FAO. In the case of both tea and jute fabrics India has a preponderant share in World exports and the estimates presented here assume that India would continue to maintain this position in the increased World trade by the end of this decade.

In the case of vegetable oils, fish and fish preparations, oil cakes, and sugar India has only a minor share in World exports at present. The estimates presented here for these commodities assume that with the increased domestic supplies planned for by 1970-71, India would be able to increase her share in World trade considerably. The estimate for sugar exports by 1970-71 represents a lower figure than the actual achievement in 1961-62 and 1962-63. The exports of sugar in these years were exceptionally high due to a strong World demand and domestic availability. The estimates for 1970-71 and 1975-76 have been arrived at after estimating the balances that would be available for exports in these years. The estimate for cotton textiles assumes no increase over the 1960-61 earnings. India's exports of cotton textiles have been exhibiting a downward trend in recent years and it is assumed here that the level of earnings prevailing by the end of the last decade would be restored. On account of the increasing trends in import substitution in the major World markets for this commodity no appreciable increase in exports can be expected.

Mineral ores

In the year 1961-62 mineral ores were contributing around Rs. 40 crores to the total export earnings with a share of 6 per cent in the total. It is estimated here that earnings from this group of exports would increase to Rs. 171 crores by 1970-71 with a share of 14 per cent in the total export earnings estimated at Rs. 1224 crores. The earnings from this group of items is expected to further increase to Rs. 230 crores by 1975-76 with a share of 14 per cent in the estimated total earnings at Rs. 1634 crores.

This group of exports includes items like iron ore, manganese ore, coal and mica. A major share of the estimated increase in earnings is expected to be contributed by iron ore. Japan and the East European countries are at present providing the major markets for Indian iron ore. With the increase in steel production planned for by these countries it is to be expected that their demand for iron ore would appreciably increase. It is estimated by the Economic Commission for Europe that Japan would be needing around 40 million tons of iron ore by 1970-71. Japan is already committed to buy around 13 million tons of ore from India by 1970-71. With the prospect of the increased demand from Japan and Eastern Europe it can be expected that India would be exporting at least 25 million tons of ore by 1970-71 valued at Rs. 130 crores. Manganese and coal are expected to contribute around Rs. 30 crores to the estimated value of earnings of Rs. 170 crores from this group of items by 1970-71. Japan and Pakistan are expected to provide the major markets for these two items respectively.

Manufactured goods

A major share in the estimated increase in earnings by 1970-71 is expected to be contributed by this group of exports. In the year 1961-62 this group of items were earning Rs. 60 crores with a 9 per cent share in the total export earnings. It is estimated here that earnings from this group would increase to Rs. 276 crores by 1970-71. Correspondingly their share in the total earnings estimated at Rs. 1224 crores would go up to 22·5 per cent. By 1975-76 this group of items are expected to contribute around Rs. 484 crores with a 30 per cent share in the expected total earnings of Rs. 1624 crores.

The items which are expected to contribute a major share to the estimated earnings from this group are electrical machinery including electronic equipment, engineering goods, iron and steel castings, metals and metal manufactures mainly of iron and steel and aluminium, chemicals, rubber manufactures and drugs and medicines. World demand for these items is exhibiting an upward trend in recent years and would not be a limiting factor to future exports. In view of the adequate supplies planned for, the achievement of the estimated increase in earnings would not be beyond reach.

On the basis of the above estimates the total annual export earnings are estimated to reach Rs. 1225 crores by 1970-71, and are expected to further increase to Rs. 1624 crores by 1975-76. Over the period 1961-62 to 1970-71 the total export earnings are estimated to grow at a compounded rate of 7 per cent per annum. These estimates also envisage a decline in the share of agriculture and animal based exports and a corresponding increase in the share of manufactured goods and ore group of exports.

TABLE : 1 EXPORT PROSPECTS , INDIA 1960-62 TO 1970-71

sl. no.	commodities		unit of quantity	export price Rs. per unit	quantity	
					1961-62	1962-63
	1		2	3	4	5
	Agriculture and animal based exports					
1	meat and meat preparations		index	..	100	142
2	fish & fish preparations		th. tonnes	3727	15·7	10·9
3	fruits and vegetables		index	..	100	91
	(*a*) cashew, kernels & nuts		th. tonnes	3833	41·7	53·6
	(*b*) others		index	..	100	109
4	sugar		th. tonnes	411	373	534
5	coffee		th. tonnes	3800	29·7	20·4
6	tea		mil. kg.	5·94	206	220
7	spices		th. tonnes	7324	64·4	34·0
8	oil cakes		th. tonnes	370	506	859
9	tobacco	unmanufactured	mil. kg.	0·29	444	620
		manufactured	th. kg.	4·32	1885	2010
10	hides and skins undressed		th. tonnes	7333	11·7	14·5
11	wool and other animal hair		mil. kg.	5·11	18·0	13·3
12	cotton	raw	th. tonnes	2103	62	58
		waste	th. tonnes	1162	41·6	36·6
13	coir & coir manufactures		th. tonnes	1545	76·1	78·3
14	vegetable oils		th. tonnes	1361	38·8	97·0
15	essential oils		th. kg.	30·85	1054	1394
16	cotton yarn and twist		mil. kg.	5·09	9·0	11·0
17	cotton fabrics		mil. metre	1·10	515	423
18	woollen & worsted fabrics		index	..	100	200
19	woollen carpets		th. sq. metre	34	1273	1260
20	jute fabrics		th. tonnes	1743	793	887
	Mineral Ores					
21	iron ore and concentrates		th. tonnes	52	3366	9127
22	Manganese ore		th. tonnes	105	965	1763
23	coal coke and briquettes		th. tonnes	25	934	1115
24	mica		th. tonnes	3041	28·3	34·2
	Manufactured Goods					
25	petroleum products		index	..	100	118
26	chemicals		index	..	100	128
27	medicinal & pharmaceutical products		index	..	100	107
28	soaps & cleansing preparations		index	..	100	102
29	miscellaneous chemical materials		index	..	100	280
30	leather and leather goods		index	..	100	100
31	rubber manufactures (including crude rubber)		index	..	100	180
32	paper and paper board manufactures		index	..	100	91
33	fabrics of synthetic fibre and spun glass (mainly art silk fabrics)		index	..	100	105

EACH YEAR AND FOR 1975-6

quantity							
1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71
6	7	8	9	10	11	12	13
154	167	182	197	214	233	252	275
14·2	18·4	23·9	31·1	40·4	52·5	68·2	89·9
100	110	121	133	146	161	176	193
56·71	60·00	63·48	67·16	71·05	75·17	79·53	83·61
137	173	211	274	345	435	548	722
86	97	110	124	140	158	178	200
21·8	23·4	25·0	26·7	28·6	30·6	32·8	35·0
226	232	239	245	251	258	265	272
34·7	35·4	36·1	36·8	37·5	38·2	39·0	39·9
883	907	932	957	984	1011	1039	1068
646	674	702	731	762	794	828	858
2231	2476	2748	3050	3386	3758	4171	4651
14·5	14·5	14·5	14·5	14·5	14·5	14·5	14·5
13·8	14·4	15·0	15·6	16·2	16·8	17·4	18·0
62·7	67·8	73·4	79·4	85·9	92·9	100·5	107·9
36·6	36·6	36·6	36·6	36·6	36·6	36·6	36·6
80·6	83·1	85·6	88·1	90·8	93·5	96·3	100·0
109·0	122·6	137·9	155·1	174·5	196·3	220·8	249·8
1506	1626	1756	1896	2048	2212	2389	2597
12·0	13·1	14·3	15·7	17·2	18·8	20·6	22·6
437	452	466	482	497	514	530	549
225	252	285	322	365	412	465	525
1339	1423	1512	1606	1706	1813	1926	2052
899	911	923	936	949	952	965	987
8056	9482	11161	13136	15408	18137	21356	25000
855	958	1074	1204	1350	1513	1696	1908
1323	1574	1870	2222	2640	3136	3726	4360
34·2	34·2	34·2	34·2	34·2	34·2	34·2	34·2
132	148	165	185	207	231	259	286
168	221	289	379	496	650	852	1115
141	186	246	325	429	566	746	1000
128	160	200	255	321	400	536	714
407	587	853	1240	1800	2607	3780	5667
104	108	113	117	122	127	132	138
242	352	510	740	1072	1555	2255	3125
127	177	248	347	485	680	952	1335
119	134	151	170	192	217	244	276

TABLE

Sl. no.	commodities	unit of quantity	export price Rs. per unit	quantity 1961-62	1962-63
	1	2	3	4	5
	Manufactured Goods—cont'd.				
34	cement	th. tonne	80	98	35
35	glass and ceramics	index	..	100	100
36	pig iron and sponge iron	th. tonnes	263	74·0	19·0
37	iron castings	th. tonnes	600	5	4
38	machinery : electrical (includes electronic equipment)	index	..	100	140
39	other manufactures of metals	index	..	100	44
40	machinery non-electrical	index	..	100	100
41	transport equipment	index	..	100	120
42	wood lumber and cork & manufactures thereof	index	..	100	117
	Miscellaneous	index	..	100	37
	TOTAL	..	..	..	..

NOTE : (1) Dyeing, Tanning and Colouring materials are included in chemicals.
(2) Miscellaneous chemical material includes Fabricated Synthetic and Plastic goods, insecticides, fungicide etc.
(3) Other manufactures of metals include steel castings and forgings finished structural parts of Iron and Steel, Hand tools and hardwares.

E. 1 : CONTD.

quantity							
1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970 1
6	7	8	9	10	11	12	13
43	53	65	80	98	120	148	188
144	196	284	412	556	804	1000	1200
23·75	29·69	37·11	46·39	57·99	72·49	90·61	114·0
7	13	23	41	74	133	239	433
211	318	480	724	1092	1647	2484	3750
55	68	84	104	129	160	199	252
137	188	257	353	483	662	907	1250
186	288	446	692	1072	1662	2576	4100
123	129	135	142	149	156	163	172
89	89	89	89	89	89	89	89
..	..	..	..	..	..	..	..

TABL

sl. no.	commodities		unit of quantity	export price Rs. per unit	Value (Rs. crores)		
					1961-62	1962-63	1963-64
	1		2	3	14	15	16
	Agriculture and animal based exports		..	..	509·19	557·91	563·97
1	meat and meat preparations		index	..	1·20	1·70	1·85
2	fish & fish preparations		th. tonnes	3727	3·90	4·10	5·33
3	fruits and vegetables		index	..	25·40	23·20	25·48
	(a) cashew, kernels & nuts		th. tonnes	3833	18·20	20·70	21·90
	(b) others		index	..	2·30	2·50	3·15
4	sugar		th. tonnes	411	15·33	17·80	3·53
5	coffee		th. tonnes	3800	9·00	7·60	8·10
6	tea		mil. kg.	5·94	122·40	129·20	132·90
7	spices		th. tonnes	7324	17·50	24·90	25·40
8	oil cakes		th. tonnes	370	17·30	31·80	32·67
9	tobacco	unmanufactured	mil. kg.	0·29	14·90	18·00	18·76
		manufactued	th. kg.	4·32	0·91	0·87	0·95
10	hides and skins undressed		th. tonnes	7333	8·80	11·00	11·00
11	wool and other animal hair		mil. kg.	5·11	9·20	6·64	7·00
12	cotton	raw	th. tonnes	2103	14·30	12·20	13·17
		waste	th. tonnes	1162	5·20	4·30	4·30
13	coir and coir manufactures		th. tonnes	1545	11·36	12·10	12·49
14	vegetable oils		th. tonnes	1361	5·80	13·20	14·85
15	essential oils		th. kg.	30·85	4·51	4·30	4·64
16	cotton yarn and twist		mill. kg.	5·09	4·90	5·60	6·12
17	cotton fabrics		mill. metre	1·10	48·40	46·50	48·01
18	woollen and worsted fabrics		index	..	0·40	0·80	0·90
19	woollen carpets		th. sq.metre	34	4·28	4·30	4·57
20	jute fabrics		th. tonnes	1743	143·70	154·60	156·90
	Mineral Ores		..	..	40·07	56·70	64·58
21	Iron ore and concentrates		th. tonnes	52	17·45	35·50	41·89
22	manganese ore		th. tonnes	105	10·50	8·00	8·97
23	coal coke and briquettes		th. tonnes	25	2·42	2·80	3·32
24	mica		th. tonnes	3041	9·70	10·40	10·40
	Manufactured Goods		..	..	60·62	56·04	63·88
25	petroleum products		index	..	3·50	4·13	4·62
26	chemicals		index	..	1·30	1·67	2·19
27	medicinal & pharmaceutical product		index	..	1·00	1·07	1·41
28	soaps & cleansing preparations		index	..	0·42	0·43	0·54
29	miscellaneous chemical materials		index	..	0·15	0·42	0·61
30	leather and leather goods		index	..	25·45	25·45	26·40
31	rubber manufactures (including crude rubber)		index	..	0·40	0·72	0·97
32	paper and paperboard manufactures		index	..	0·75	0·68	0·95
33	fabrics of synthetic fibre and spun glass (mainly art silk fabrics)		index	..	7·60	8·00	9·0

E. 1: contd.

Value (Rs. crores)

1964-65	1965-66	total 1961-65	1966-67	1967-68	1968-69	1969-70	1970-71	total 1966-70	1975-76 (provison)
17	18	19	20	21	22	23	24	25	26
586·32	610·67	2828·06	604·80	630·62	658·84	689·89	722·44	3306·59	850·3
2·01	2·18	8·94	2·37	2·57	2·80	3·03	3·30	14·07	5·0
6·93	9·02	29·28	11·73	15·25	19·84	25·79	33·80	106·41	40·0
27·98	30·73	132·79	33·75	37·15	40·81	44·81	49·00	205·52	60·0
23·17	24·52	108·49	25·95	27·45	29·04	30·73	32·40	145·57	39·0
3·97	5·00	16·92	6·30	7·94	10·00	12·60	16·60	53·44	26·0
3·99	4·52	45·17	5·10	5·75	6·49	7·31	8·22	32·87	20·0
8·62	9·19	42·51	9·78	10·42	11·10	11·83	12·60	55·73	18.0
136·70	140·70	661·90	144·73	148·87	153·13	157·51	162·00	766·24	185·0
25·91	26·42	120·13	26·95	27·49	28·04	28·60	29·20	140·28	35·0
33·57	34·51	149·85	35·46	36·43	37·43	38·46	39·52	187·50	50·0
19·55	20·37	91·58	21·22	22·11	23.04	24·01	24·70	115·08	30·0
1·03	1·12	4·88	1·22	1·33	1·45	1·58	2·00	7·58	4·0
11·00	11·00	52·80	11·00	11·00	11·00	11·00	11·00	55·00	14·0
7·38	7·79	38·01	8·22	8·67	9·15	9·65	10·00	45·69	12·0
14·22	15·36	69·25	16·59	17·92	19·35	20·90	22·70	97·46	30·0
4·30	4·30	22·40	4·30	4·30	4·30	4·30	4·30	21·50	4·3
12·90	13·32	62·17	13·75	14·20	14·66	15·14	15·60	73·35	18·0
16·71	18·80	69·36	21·15	23·79	26·76	30·10	34·00	135·80	45·0
5·01	5·41	23·87	5·84	6·31	6·81	7·35	8·00	34·31	10·0
6·69	7·31	30·62	7·99	8·73	9·54	10·43	11·40	48·09	14·0
49·57	51·18	243·66	52·84	54·56	56·33	58·16	60·00	281.89	60·0
1·01	1·14	4·25	1·29	1·46	1·65	1·86	2·10	8·36	4·0
4·86	5·17	23·18	5·50	5·85	6·22	6·61	7·00	31·18	9·0
159·24	161·61	776·05	164·02	166·46	168·94	171·45	172·00	842·88	183·0
73·70	84·38	319·43	96·88	111·25	128·37	148·49	171·30	656·29	230·0
49·31	58·04	202·19	68·31	80·12	94·31	111·05	130·00	483·79	175·0
10·05	11·27	48·79	12·63	14·16	15·87	17·80	20·00	80·46	25·0
3·94	4·67	17·15	5·54	6·57	7·79	9·24	10·90	40·04	15·0
10·40	10·40	51·30	10·40	10·40	10·40	10·40	10·40	52·00	10·0
74·01	87·30	341·85	105·04	128·98	162·15	208·58	276·00	880·75	484·0
5·17	5·79	23·21	6·48	7·25	8·11	9·07	10·00	40·91	10·0
2·87	3·76	11·79	4·93	6·45	8·45	11·07	14·50	45·40	20·0
1·86	2·46	7·80	3·25	4·29	5·66	7·46	10·00	30·66	20·0
0·67	0·84	2·90	1·07	1·35	1·68	2·25	3·00	9·35	6·0
0·88	1·28	3·34	1·86	2·70	3·91	5·67	8·50	22·64	20·0
27·58	28·71	133·68	29·89	31·12	32·40	33·73	35·00	162·14	45·0
1·41	2·04	5·54	2·96	4·29	6·22	9·02	12·50	34·99	20·0
1·33	1·86	5·57	2·60	3·64	5·10	7·14	10·00	28·48	20·0
10·17	11·47	46·26	12·94	14·60	16·47	18·58	21·00	83·59	35·0

TABLE E. 1. EXPORT PROSPECTS INDIA 1961-62

Sl. no.	commodities	unit of quantity	export price Rs. per unit	Value (Rs. crores) 1961-62	1962-63	1963-64
	1	2	3	14	15	16
34	cement	th. tonnes	80	0·90	0·28	0·34
35	glass and ceramics	index	..	0·25	0·25	0·36
36	pig iron and sponge iron	th. tonnes	263	1·90	0·50	0·64
37	iron castings	th. tonnes	600	0·30	0·28	0·43
38	machinery : electrical (includes electronic equipment)	index	..	1·00	1·40	2·11
39	other manufactures of metals	index	..	9·90	4·36	5·41
40	machinery non-electrical	index	..	2·40	2·40	3·29
41	transport equipment	index	..	0·50	0·60	0·93
42	wood lumber and cork and manufactures thereof	index	..	2·90	3·40	3·57
	Miscellaneous	index	..	62·00	23·10	55·33
	TOTAL	..	..	671·88	693·75	747·76

NOTE : (1) Dyeing, Tanning and colouring materials are included in chemicals.
(2) Miscellaneous chemical material includes fabricated synthetic and plastic goods, insecticides, fungicides etc.
(3) Other manufactures of metals include steel castings and forgings, finished structural parts of iron and steel, hand tools and hardware.

TO 1970-71 EACH YEAR AND FOR 1975-76—(contd.)

Value (Rs. crores)									
1964-65	1965-66	total 1961-65	1966-67	1967-68	1968-69	1969-70	1970-71	total 1966-70	1975-76 (provision)
17	18	19	20	21	22	23	24	25	26
0·42	0·52	2·46	0·64	0·80	0·98	1·21	1·50	5·13	6·0
0·49	0·71	2·06	1·03	1·39	2·01	2·50	3·00	9·93	6·0
0·81	1·03	4·88	1·31	1·66	2·11	2·62	3·00	10·70	6·0
0·77	1·38	3·16	2·48	4·45	7·99	14·35	26·00	55·27	40·0
3·18	4·80	12·49	7·24	10·92	16·47	24·84	37·50	96·97	70·0
6·71	8·32	34·70	10·32	12·80	15·87	19·68	25·00	83·67	60·0
4·51	6·18	18·78	8·47	11·60	15·89	21·77	30·00	87·73	60·0
1·44	2·23	5·70	3·46	5·36	8·31	12·88	20·50	50·51	30·0
3·74	3·92	17·53	4·11	4·31	4·52	4·74	5.00	22·68	10·0
55·33	55·33	251·09	55·33	55·33	55·33	55·33	55·33	276·65	60·0
789·36	837·68	3740·43	862·05	926·18	1004·69	1102·29	1225·07	5120·28	1624·3

TABLE E. 2

INDICES OF GROWTH OF INDIAN EXPORTS, 1961-62 TO 1975-76

Items	1961-62	1965-66	1970-71	1975-7
1	2	3	4	5
1. Agricultural and animal based exports	100	120	142	167
2. Mineral ores	100	210	428	574
3. Manufactured goods	100	144	455	798
4. Miscellaneous	100	89	89	97
5. Total	100	125	182	242
6. Total value of exports (Rs. crores)	672	838	1225	162

TABLE E. 3

STRUCTURE OF INDIAN EXPORTS, 1961-62 TO 1975-76

items	percentages			
	1961-62	1965-66	1970-71	1975-76
1	2	3	4	5
1. Agriculture and animal based exports	75·8	72·9	59·0	52·3
2. Mineral ores	6·0	10·1	14·0	14·2
3 Manufactured goods	9·0	10·4	22·5	29·8
4 Miscellaneous	9·2	6·6	4·5	3·7
5. Total	100·0	100·0	100·0	100·0
6. total value of exports (Rs. crores)	672	838	1225	1624

APPENDIX F: ESTIMATE OF IMPORT REQUIREMENTS, INDIA: 1960-61 TO 1975-76.

Table F summarizes the actual volume and composition of impo in 1960-61 and the projected imports at the end of the Third, Four and Fifth Plans. The estimates for metals, machinery, chemicals a mineral products are derived from the detailed commodity balances (s Appendix C). The level of imports of textile fibres, food products oth than cereals, vegetable oils and other items are assumed to be stabilis more or less at the present level.

Total imports increase from Rs. 11,200 million in 1960-61 to appr ximately Rs. 13,500 million in 1970-71 and Rs. 16,000 million in 1975-7 The structure of imports also changes substantially; the relative impo ance of agricultural products which accounted for over 37 per cent total imports in 1960-61 falls rather sharply to about 22 per cent 1975-76. The share of metals is expected to remain steady around 15- per cent of total imports but within this group the share of non-ferro metals increases sharply and that of steel declines. Imports of chemic grow faster than aggregate imports mainly on account of the rap increase under petroleum, sulphur and rock phosphate. Consequent their share in total rises steadily throughout the period. As a result the expansion of domestic output of machinery and equipment, t import of machinery and equipment is expected to remain arou Rs. 5,500—5,750 million from 1965-66 onwards. Their share in the to imports would however decline from about 44 per cent in 1965-66 about 36 per cent in 1975-76.

As a proportion of national income, imports would decline fr about 8 per cent in 1960-61 to little over 4 per cent in 1975-76. The re tively slow growth of imports relative to the expansion of natio income envisaged in this outline arises mainly because of the empha on massive import substitution in metals, machinery and chemical ind tries. In all these items the projections imply a steep fall in the ra of imports to total requirements. In 1960-61, for instance, nearly 25 p cent of total steel requirements was met by imports; the proportion fa to less than 10 per cent by 1970-71 and to 5 per cent by the end of the fi plan. In the case of machinery, nearly 35 per cent of total equipme requirements at the end of the third plan are expected to be met by impo and nearly 25 per cent of the domestic production of machinery would c sist of imported components. The Programme envisaged in this pa visualises that no more than 10 per cent of the total requirements of fi shed equipment at the end of the fourth and fifth plan period will be i ported. Similarly the import content of domestically produced equipme is postulated to fall from about 25 per cent in 1965-66 to about 15 p cent by 1970-71 and 10 per cent by 1975-76.

In the case of chemicals, whereas the total requirements are estima to increase more than seven fold over the decade 1960—70, imports likely to double. Between 1960 and 1975, demand increases ne thirteen fold and imports by less than 200 per cent.

It will be evident from the foregoing that a massive increase in the omestic output of metals, chemicals and machinery is of crucial importnce if the demand for imports have to be restrained successfully withut impairing the capacity for sustaining adequately high rates of evelopment.

TABLE F.1.

IMPORT REQUIREMENTS, INDIA 1960-75

	1960-61		1965-66	
	Qty.	Value	Qty.	Valu
1	2	3	4	5
1. Metals		169·8		17
2. Iron and steel		122·5		10
3. Non-ferrous metals	195	47·3	330	7
4. Copper	63	21·9	95	3
5. Lead and zinc	97	11·7	175	1
6. Others	35	13·7	60	2
7. Metal manufactures		22·9		2
8. Machinery and components		333·0		54
9. Sub-total (metals and machinery)		525·7		74
10. Petroleum crude and products	4400	69·4	10500	9
11. Chemicals and allied products		108·8		17
12. Fertilisers	100	10·0	440	4
13. Rock phosphate	254	2·3	700	
14. Sulphur	174	2·7	470	
15. Other chemicals and products		93·8		10
16. Textile fibres		111·2		6
17. Raw cotton		81·7		3
18. Others		29·5		3
19. Cereals and food products		210·3		6
20. Cereals*		181·4		3
21. Other products		28·9		2
22. Vegetable oil including copra		15·3		1
23. Other imports		80·9		10
24 Total requirement		1121·6		129

*Commercial imports, excluding any imports under P.L. 480.

Quantity in thousand tonnes
(value in Rs. crores)

1970-71		1975-76		Percentage Share (value)			
Qty.	Value	Qty.	Value	1960-61	1965-66	1970-71	1975-76
6	7	8	9	10	11	12	13
	229		261	15·1	14·2	16·9	16·2
	102		75	10·9	8·4	7·5	4·7
490	127	680	186	4·2	5·8	9·4	11·5
150	51	200	68	2	2·6	3·8	4·2
295	28	405	39	1	1·3	2·1	2·4
45	48	75	79	1·2	1·9	3·5	4·9
	25		25	2	1·6	1·8	1·6
	532		573	29·7	43·7	39·1	35·6
	786		859	46·8	59·5	57·8	53·4
20000	144	27500	198	6·2	7·4	10·6	12·3
	121		203	9·7	13·6	8·9	12·6
480	18	600	18	0·9	3·9	1·3	1·1
2600	23	6000	54	0·2	0·5	1·7	3·4
1090	18	2200	37	0·2	0·6	1·3	2·3
	62		94	8·4	8·6	4·6	5·8
	95		100	9·9	5·5	7	6·2
	74		75	7·3	2·8	5·5	4·7
	21		25	2·6	2·7	1·5	1·5
	69		75	18·8	4·9	5·1	4·7
	35		35	16·2	2·8	2·6	2·2
	34		40	2·6	2·1	2·5	2·5
	20		25	1·4	1·1	1·5	1·5
	125		150	7·2	8	9·1	9·3
	1360		1610	100	100	100	100

APPENDIX G : ESTIMATE OF INVISIBLE DURING THE FOURTH AND THE FIFTH PLAN

Table G.1 summarises the estimates on receipts, payment and net position under invisibles during 1965-66, 1970-71 and 1975-76. For purposes of comparison, figures are also given for 1962-63—the latest year for which accounts are available. The figures for 1962-63 and the estimates for 1965-66 and 1970-71 are derived from the Reserve Bank paper "Estimate of India's Balance of Invisible Account during the Fourth Plan" except for the adjustments made in three major heads *i.e.* foreign travel, transportation and investment income. Under some minor heads the estimates for 1975-76 have been derived by projecting the past trend and by taking into account the expected growth of India's import and export trade. The adjustments carried out in Reserve Bank estimates and the basis of estimates for 1975-76 under major heads are discussed below:

Foreign Travel.—The Reserve Bank, in their estimates, have projected the past trend for estimating receipts from foreign travel. On this basis, the receipts are estimated to increase from Rs. 167 million in 1962-63 to Rs. 200 million in 1965-66 and Rs. 265 million in 1970-71. However, with greater investment in tourism provided in the fourth and the fifth plan for setting up hotels and other travel facilities and vigorous publicity including distribution of travel films and tourist literature, a substantially higher income from this source could be expected. The presen estimates take credit for a receipt of Rs. 320 million in 1970-71 and Rs 500 million in 1975-76.

The Reserve Bank estimates assume that the existing travel restriction on Indian citizens would be largely removed and this will result i an increase in expenditure from Rs. 110 million in 1965-66 to Rs. 20 million in 1970-71. These estimates have been adopted for the purpos of this projection and the expenditure is expected to further increas to Rs. 220 million in 1975-76. On this basis, net income from this sourc is expected to be Rs. 120 million in 1970-71 and Rs. 280 million in 1975-7

TABLE G. 1

Estimates of receipts and payments under invisibles India 1962-63 *to* 1975-76

(Rs. million)

Sl. no. (1)	head (2)	1962-63 (3)	1965-66 (4)	1970-71 (5)	1975-7 (6)
1	Receipts	1687	1995	2540	3300
2	foreign travel	167	200	320	50
3	transport	478	550	745	103
4	insurance	80	90	115	19
5	investment ncome	109	105	115	14

(1)	(2)	(3)	(4)	(5)	(6)
6	government	65	55	55	60
7	private	44	50	60	80
8	government not included elsewhere	186	90	255	340
9	miscellaneous	252	40	415	340
10	private donations	415	520	575	640
11	Payments	2031	2695	3770	4800
12	foreign travel	118	110	200	220
13	transport	244	270	315	350
14	insurance	48	50	65	70
15	investment income	902	1440	2300	2600
16	government	518	1010	1760	1900
17	private	384	430	540	700
18	government not included elswwhere	255	260	190	210
19	miscellaneous	324	415	520	550
20	private donations	140	150	180	200
21	Net invisibles (1-11)	(—)344	(—)700	(—)1230	(—)900
22	foreign travel	49	90	120	280
23	transport	234	280	430	680
24	insurance	32	40	50	80
25	investment income	(—)793	(—)1335	(—)2185	(—)2460
26	government	(—)453	(—)955	(—)1705	(—)1840
27	private	(—)340	(—)380	(—)480	(—)620
28	government not included elsewhere	(—)69	(—)70	65	130
29	miscellaneous	(—)72	(—)75	(—)105	(—)50
30	private donations	275	370	395	440

Transportation.—According to the estimates of Reserve Bank, income from transportation will increase from Rs. 478 million in 1962-63 to Rs. 25 million in 1965-66 and Rs. 665 million in 1970-71. In making this estimate, the growth in exports and the low share of Indian shipping in India's foreign trade has been assumed to be relatively low.

The capacity of Indian ships is expected to exceed the Third Plan targets. On present reckoning, the capacity of Indian ships is expected to increase from 0·9 million GRT in 1960-61 to 1·7 million GRT in 1965-66. According to the estimates prepared by the Perspective Planning Division, about 1·5 million GRT will be acquired in the fourth plan and 2·0 million GRT in fifth plan. This will raise a total tonnage of Indian ships to 3·2 million GRT in 1970-71 and 5·2 million GRT in 1975-76. Of the total tonnage, the share of overseas tonnage is expected to increase from 0·6 million GRT in 1960-61 to 1·3 million GRT in 1965-66, 2·6 million GRT in 1970-71 and 4·4 million GRT in 1975-76, by which time India's share of total overseas tonnage would reach about half.

According to the rough estimates made in the Perspective Planning Division, net foreign exchange earnings per GRT of foreign tonnage added, is expected to be Rs. 150. This is on the assumption that additional tonnage will be mainly in the terms of bulk carriers which gives a relatively less return per GRT. On this basis alone, the receipts from transportation should increase from Rs. 446 million in 1960-61 to Rs. 550 million in 1965-66. Rs. 745 million in 1970-71 and Rs. 1030 million in 1975-76. The payments under transport are expected to increase from Rs. 270 million in 1965-66 to Rs. 315 million in 1970-71 and Rs. 350 million in 1975-76. Thus the net income from this source would increase from Rs. 280 million to Rs. 430 million and Rs. 680 million during this period.

Investment Income.—The Reserve Bank has estimated that payments on investment income on Government account—which mainly represents interest payment on foreign loans—would increase from Rs. 518 million in 1962-63 to about Rs. 1,200 million in 1965-66, and Rs. 1740 million in 1970-71. The amount for 1970-71 excludes interest payment on loans to be raised during the fourth plan.

The above estimates made by the Reserve Bank appear to be on high side. Making an optimum assumption that the net foreign loans (net of repayment) sanctioned during the last three years of the third plan will be Rs. 16,500 million and that net average annual aid in the fourth plan would amount to about Rs. 5,000 million, the total interest payment on government account would amount to Rs. 1,010 million in 1965-66 and Rs. 1,760 million in 1970-71. Assuming that the net foreign aid (net of repayments) on Government account during the fifth plan would be Rs. 500 million, (for purposes of calculating interest liabilities), interest payments by Government would amount to Rs. 1,900 million in 1975-76. The calculations of interest payments have been made on the assumption that interests on new loans would average 3 per cent a year.

The Reserve Bank estimates of investment income on private account is shown at Rs. 430 million in 1965-66 and Rs. 540 million in 1970-71. If the new foreign private investments are taken at about Rs. 3,000 million during the fifth plan, the payments under this head will increase to about Rs. 700 million in 1975-76.

Income from Indian investments abroad—government as well as private—is only about Rs. 110 million at present. This income is expected to increase to Rs. 115 million in 1970-71 and Rs. 140 million in 1975-76. The net payments under this head are, therefore, expected to increas from Rs. 790 million in 1962-63 to Rs. 1,340 million in 1965-66, Rs. 2,190 million in 1970-71, and Rs. 2,460 million in 1975-76.

The Upshot

Adding receipts under other heads, total receipts under invisibles are estimated to increase from Rs. 1,690 million in 1962-63 to Rs. 2,000 million in 1965-66, Rs. 2,540 million in 1970-71, and Rs. 3,300 million in 1975-76. The payments during the same period are expected to increase from Rs. 2,030 million to Rs. 2,700 million, Rs. 3,770 million and Rs. 4,200 million. The net payment under invisibles are thus expected to increase from Rs. 345 million in 1962-63 to Rs. 700 million in 1965-66, Rs. 1,230 million in 1970-71. In 1975-76 the net payment is expected to be Rs. 900 million.

APPENDIX H: ALTERNATIVE CONSISTENCY MODELS OF FOURTH PLAN BASED ON 30 SECTOR INTER INDUSTRY MATRIX

This Appendix summarises some preliminary results of studies in the Planning Unit of the Indian Statistical Institute at New Delhi (working in collaboration with the Perspective Planning Division), based on a 30-sector inter industry model. The object was to examine the effect on the level of domestic output in key sectors of the economy in 1970-71, of alternative assumptions regarding the growth of consumption and investment and the degree of import substitution in the machine building industries during the fourth plan[1].

The coefficients for 1970-71 are mostly derived from an inter-industry table for 1960-61 especially compiled for this purpose in the Indian Statistical Institute (Annexure 1). In certain cases, notably fuel and power, and steel and cement, the coefficients for some sectors had to be altered in the light of independent information on the anticipated changes in product and technology mix. This adaptation was facilitated by the existence of detailed data in the Perspective Planning Division, including results of studies made by the Working Groups. The data underlying the projections are subject to error, and most sectors are too highly aggregated to provide the basis for working out targets for individual items. Nevertheless, the analysis provides significant insights into the effects of differences in basic assumptions.

The implications of the following three major alternative courses of development over the decade 1960-61 to 1970-71 have been examined. *Alternative* A: High income and high investment:

This broadly corresponds to the PP Division model which postulates an average annual rate of increase of 6·3 per cent in national income over the decade. Per capita total consumption grows at an average annual rate of 3:5 and per capita private consumption at 3:0 per cent per annum over the decade. Net investment in 1970-71 is assumed to be about 21 per cent of national income.

Alternative B: Low income and high investment.

National income is assumed to grow at an average annual rate of about 5 per cent over the decade, per capita total consumption at slightly less than 2 per cent, and per capita private consumption at the obviously inadequate rate of 1·2 per cent per annum. Essentially this corresponds to a pessimistic view of the prospects for agricultural development. The ratio of capital formation to income is also assumed to be somewhat lower than in alternative A.

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[1] These studies are being done by a team of workers in the ISI Planning Unit New Delhi under the guidance of Dr. A. Rudra and Professor Alan S. Manne of the Centre for International Studies, M.I.T. The computational work was made possible through the courtesy of the Electronic Computing Centre at the Indian Institute of Technology at Kanpur. A fuller report is being prepared.

Alternative C: Low income and high investment:

This model examines the implications of a target of overall income growth which lies between A and B, but provides for capital formation at the level postulated in A and consumption at the level in B.

The aggregate projections corresponding to alternative models are given below:—

(Rs. crores at 1959-60 prices)

	1960-61	1970-71		
		A	B	C
gross capital formation	2510	6400	5300	6400
government consumption	1380	3400	3400	3400
household consumption	12605	21400	17900	17900
gross domestic expenditure	16495	31200	26600	27700

NOTE —The magnitudes for 1960-61 are derived from the Table of Inter-Industry Transactions (India) 1960-61 compiled in the Planning unit of the ISI.

Domestic Output: **1970-71**

A comparison of the domestic output levels in key sectors corresponding to these alternatives (see Table 1) gives us an idea of the effect of varying the target of consumption or investment or both on the structure of production. The table shows that the impact of differences in the targetted level of consumption (alternative A and C) is felt mostly on agriculture-based products. They also have a significant effect on the demand for fuel, power and transport, but the requirements for steel and machinery are virtually unaffected.

In the Indian context, unlike advanced countries, the demand for consumer goods is made up mostly of agriculture-based product. The volume of metal products (cycles, fans, cars etc.) used by consumers is a very small fraction of the total. The bulk of the demand for metals and metal products is for construction and manufacture of machinery and equipment for capital formation.

The close relationship between the projected level of investment and the output target for metal and machinery is brought out by a comparison of alternatives B and C which assume the same consumption target but different levels of investment in 1970-71. In Alternative C the level of investment is approximately 20 per cent higher than in alternative B, but consumption is the same. The corresponding outputs of machinery and metals are higher by about 15 per cent compared with B.

TABLE 1: *Physical output levels of selected industries corresponding to alternative assumption of growth, India*: 1960-61 *to* 1970-71.

sector	unit of measures	1960-61	1970-71		
			A	B	C
(1)	(2)	(3)	(4)	(5)	(6)
foodgrains	mill. tonnes	81	129	119	119
cotton and other textiles	yarn '000 tonnes	800	1459	1155	1156
other agriculture	index	100	162	143	143
chemical fertiliser					
N	'000 tonnes	99	1664	1506	1506
P_2O_5	'000 tonnes	54	908	822	822
petroleum products	mill. tonnes	5·8	24·2	21·3	21·9
coal	mil. tonnes	55·5	150	130	139
llectricity generation	billion kwhs	20	89	78	82
iron and steel	mill.t onnes ingot	3·35	16·8	14·5	16·6
electrical equipment	index	100	379	325	367
transport equipment	index	100	319	275	310
non-electrical equipment	index	100	369	312	353

Machinery Import Substitution

In addition to the above alternatives, there has been an analysis of balance of payments implications of different degrees of import substitution in the machine building industries. Both a pessimistic and an optimistic viewpoint have been explored.

The specific ratios of imports to gross domestic production in each of the three branches are as follows:—

	ratio of imports to gross domestic production[1]/		
	1960-61	1970-71	
		pessimistic	optimistic[2]
electrical equipment	·45	·25	·15
transport equipment	·34	·25	·15
non-electrical equipment	·67	·35	·25

NOTE —1. Both imports and domestic production exclude primary metals but include components and consumer goods in addition to finished capital equipment.

2. This corresponds roughly to the PPD model.

As before, the household and government consumption has been set at two alternative levels: (a) Rs. 24,800 and (b) Rs. 21,300 crores in 1970-71. In order to calculate the direct and indirect repercussions of the machinery programme, it no longer seems appropriate to hold the aggregate level of investment constant. (It takes machinery to make machinery). Instead, the model determines the investment induced in each branch of the economy through multiplying that sector's output increase by its own capital-output ratio.

The principal results of these alternative cases are as follows:—

(1) The minimum trade deficit is just as sensitive to the assumptions made with respect to machinery substitution as to those made on *aggregate* levels of consumption and investment.

(2) Although success or failure in the machinery import substitution programme has a significant effect upon the output targets for metals, this programme has a comparatively minor impact upon other domestic production sectors.

(3) Even though it takes machinery to make machinery, the import substitution programme has only a barely perceptible effect upon the total volume of investment.

TABLE 2: *Effect of different assumptions regarding machinery import substitution on trade deficit*, 1970-71.

(Rs. crores)

	view on machinery import substitution			
	pessimistic		optimistic	
assumed level of household plus government consumption	24800	21300	24800	21300
investment level (*a*)	6370	5521	6487	5621
minimum trade deficit (*b*)	392	198	204	36
iron and steel output	1595	1428	1652	1477

NOTE; — (*a*) In addition to the induced component of investment; this total also includes a fixed quantity of Rs. 2294 crores worth of housing, social services, social overheads, and replacements.

(*b*) minimum trade deficit is the difference between minimum merchandise imports and merchandise exports (assumed in the model at Rs. 1078 crores).

Inter-relationship between agriculture and industry

Although not strictly following from the results of the exercise discussed above, a comment may be added on the inter-relationship of the agricultural and the industrial sector.

The assertion is sometimes made that a slowdown in agriculture implies a slowdown in aggregate demand, and hence the entire investment programme should also be slowed down. In a planned economy this argument for slowing the pace of investment seems weak for at least the following reasons, either separately or in combination:—

(1) The industrial sector provides inputs—chemical fertilisers tubewells, tractors, construction materials, etc. —all of which are designed to increase agricultural output. Any slowing of

investment in those items does not obviously help agriculture and is self-defeating.

(2) Output increase in agriculture may require larger investments to be made per unit of output. This could increase the relative proportion of the investment budget allocated to agriculture, but does not mean that the absolute amount of industrial investment needs to be scaled down provided that no rigid ceiling is accepted for total investment. On the contrary, industrial capacity may have to be increased in order to supply the additional cement, steel and machinery for the extra investment in agriculture.

(3) If the government is prepared to use fiscal methods to drain off excess purchasing power—or if it is prepared to engage in physical rationing or if it has sufficient supplies of PL 480 commodities—the level of investment programme can be set fairly independently of the availability of consumer goods supplied by agriculture.

To slow down the pace of industrialisation because of agricultural setbacks reminds one of Schumpeter's dictum about inflations followed by deliberately engineered deflations: "If a man has been injured by an automobile running over him, this does not mean that his health will be improved by backing up the auto."

ANNEXURE TO APPENDIX H.

Inter-industrial Transactions—1960-61

Value in Rs. crores; 1959-60 *producers prices*)

(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1 Construction, urban and industrial								
2 Construction, rural . .								
3 Electrical equipment . .			2·3	0·6	1·6	1·6		
4 Transport equipment . .				7·0				
5 Non-electrical equipment .	23·0	3·0	6·0	1·0	6·0	2·7	0·2	
6 Iron and steel .	214·0	26·0	4·0	22·0	71·0	43·0		
7 Iron ore . .						3·5		
8 Cement . .	44·0	5·4						
9 Other metals .			10·0	3·0	44·0	12·0		
10 Other minerals .			0·3			6·7		5·7
11 Plantations .								
12 Leather & leather products .			0·3				0·0	
13 Animal husbandry								
14 Food industries .								
15 Food grains .								
16 Cotton other textiles . .			0·3					
17 Jute textiles .			0·5	0·4		0·6		7·8
18 Other agriculture								
19 Chemical fertilizers								
20 Glass, wooden and non-metallic mineral products	280·0	35·0	2·1	0·6	1·0		0·1	
21 Forestery products	61·3	7·6	0·5	11·0				
12 Motor transport								
23 Petroleum products			0·8	2·0	1·0	2·4		0·3
24 Crude oil . .								
25 Rubber products			0·3	8·0	0·1			
26 Rubber .								
27 Chemicals .			2·8	4·4	5·2	6·0		
28 Railways . .								
29 Electricity .			1·5	3·0	4·0	6·0	0·1	3·1
30 Coal . .			0·1	0·4	2·5	6·4	0·0	5·8
31 Others . .			40·0	27·0	27·5	27·6	0·3	3·7
32 Total, rows 1-31	622·3	77·0	71·8	90·4	163·9	118·6	0·7	26·4
33 Value added .	327·9	308·7	45·4	90·6	129·7	110·8	7·0	19·5
34 Margin . .	250·8	30·3	8·8	20·0	49·9	39·6	0·1	6·7
35 Value of output .	1201·0	416·0	126·0	201·0	343·5	269·0	7·8	52·0

Source —Planning Unit, Indian Statistical Institute, New Delhi.

	(0)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1	Construction, urban and industrial								
2	Construction, rural								
3	Electrical equipment								
4	Transport equipment								
5	Non-electrical equipment		1·1				6·6		
6	Iron and steel								
7	Iron ore								
8	Cement								
9	Other metals	8·3							
10	Other minerals	5·4							
11	Plantations								
12	Leather & leather products		0·2		46·0				4·0
13	Animal husbandry				42·0		16·4		10·0
14	Food industries				2·0	55·0	48·4		5·6
15	Food grains					97·0	23·0	421·0	
16	Cotton and other textiles								18·0
17	Jute textiles	0·0		1·0	0·2		6·6	2·9	3·9
18	Other agriculture						772·0	2·7	100·0
19	Chemical fertilizers			6·3				15·0	
20	Glass, wooden and non-metallic mineral products		0·3	3·3			0·9		6·4
21	Forestry products	0·1			9·0				
22	Motor transport								
23	Petroleum products	0·3		0·4	.·6		4·5	11·9	7.2
24	Crude oil								
25	Rubber products								
26	Rubber								
27	Chemicals	0·4		1·6	12·0	19·0	7·3	3·8	34·0
28	Railways								
29	Electricity	0·6	0·8	0·2	1·3		5·8	5·6	22·0
30	Coal	0·4	0·0	0·6	0·2		2·9	0·4	6·0
31	Others	0·1	1·7	11·4	5·5		90·0	8·9	72·0
32	Total, rows 1-31	15·7	4·1	24·8	118·8	171·0	984·4	472·2	489·5
33	Value added	12·8	40·8	168·0	47·3	932·0	271·2	3489·0	277·0
34	Margin	3·5	0·5	3·2	22·0	27·0	67·4	12·8	33·5
35	Value of output	32·0	45·4	106·0	189·0	1130·0	1323·0	3974·0	800·0

(0)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
1 Construction, urban and industrial . .								
2 Construction, rural . .								
3 Electrical equipment . .								
4 Transport equipment . .								
5 Non-electrical equipment .	0·5			1·2			7·7	
6 Iron and steel .								
7 Iron ore .								
8 Cement . .				3·2				
9 Other metals .								
10 Other minerals .				6·0				
11 Plantations .								
12 Leather & leather products .								
13 Animal husbandry								
14 Food industries .								
15 Food grains .								
16 Cotton and other textiles . .	0·4			0·4				
17 Jute textiles .	3·0		0·9					
18 Other agriculture	61·0	84·0						
19 Chemical fertilizers		9·0						
20 Glass, wooden and non-metallic mineral products				8·4				
21 Forestry products								
22 Motor transport .				59·0				
23 Petroleum Products	0·3	6·3	0·1	10·0		130·0	0·1	
24 Crude oil . .							43·6	
25 Rubber products						21·0		
26 Rubber . .								
27 Chemicals .	2·9	2·1	4·2	26·0			1·2	
28 Railways . .								
29 Electricity . .	3·5	2·2	0·3	7·0			2·4	
30 Coal . .	0·5		1·2	6·4				
31 Others . .	6·0		3·1	39·0	9·0	36·0	25·6	0·3
32 Total, rows 1-31	78·1	103·6	9·8	166·6	9·0	187·0	80·6	0·3
33 Value added .	48·6	1992·0	9·2	198·0	171·0	216·0	55·6	2·9
34 Margin . .	3·3	1·4	1·7	33·4		3·0	2·8	
35 Value of output .	130·0	2097·0	20·7	398·0	180·0	406·0	139·0 +98·1 taxes	3·2

	(0)	(25)	(26)	(27)	(28)	(29)	(30)	30 Co!-J j-1 (31)	other (32)
1	Construction, urban and industrial								153·
2	Construction, rural								
3	Electrical equipment							6·1	
4	Transport equipment							7·0	
5.	Non-electrical equipment	0·3		1·7			3·8	64·8	
6	Iron and steel							380·0	—4·
7	Iron ore							3·5	1·
8	Cement							52·6	
9	Other metals			3·1				80·4	—1·
10	Other minerals			8·2				32·3	—1·
11	Plantations	15·5						15·5	
12	Leather & leather products							50·5	18·
13	Animal husbandry			2·8				71·2	
14	Food industries			10·9				121·9	
15	Food grains							541·0	
16	Cotton and other textiles	7·0		0·3				26·4	
17	Jute textiles			1·7				29·5	4·
18	Other agriculture			0·3				1220·0	172·
19	Chemical fertilizers							30·3	—0·
20	Glass, wooden and non-metallic mineral products			6·8				344·9	
21	Forestry products			12·5				161·0	11·
22	Motor transport							220·0	73·
23	Petroleum products	0·1		2·8	23·0	2·9	0·1	207·1	
24	Crude oil							43·6	
25	Rubber products	0·7						30·1	
26	Rubber	1·4						1·4	
27	Chemicals	4·4		63·0				200·3	
28	Railways							278·0	87·
29	Electricity	0·8		6·2	3·4		3·2	83·0	6·
30	Coal	0·1		3·1	31·7	13·5	7·3	89·9	9·
31	Others	5·0		14·0	17·7	12·7	4·7	488·8	
32	Total, rows 1-31	35·3		137·4	75·8	29·1	19·1	4383·3*d*	529·
33	Value added	24·7		121·8	378·0	65·5	89·2	9650·2	3224·
34	Margin	7·5		24·8	0·2	8·4	0·7	664·2	
35	Value of output	67·5		284·0	454·0	103·0	109·0	14697·7 +98·1 taxes on petroleum products	529·

	household	Government	stock	exports	imports	gross fixed capital formation	J output
(0)	(33)	(34)	(35)	(36)	(37)	(38)	(39)
Construction, urban and industrial . .		104·0				944·0	1201·0
Construction, rural . .						416·0	416·0
Electrical equipment . .	33·4	16·9	1·8	0·8	57·0	124·0	126·0
Transport equipment . .	39·2	45·9	4·6	0·5	69·2	173·0	201·0
Non-electrical equipment .	112·8	31·0	15·7	2·9	228·7	345·0	343·5
Iron & Steel .			4·0	10·1	120·9		269·0
Iron ore . .			0·4	2·4			7·8
Cement . .			—0·2	0·3	0·1		52·6
Other metals .			1·7	0·2	49·3		32·0
Other minerals .				24·5	10·0		45·4
Plantations .	73·7		5·8	109·5	8·5		196·0
Leather & leather-products	96·0		0·8	23·7	0·3		189·0
Animal husbandry	1057·4			20·6	19·2		1130·0
Food industries	978·6	93·6	102·3	36·1	9·5		1323·0
Food grains . .	3520·1		57·8		144·9		3974·0
Cotton & other. textiles .	702·6	11·3	9·2	54·5	4·0		800·0
Jute textiles .			1·6	94·4	0·1		130·0
Other Agriculture	761·4		19·1	49·3	124·8		2097·0
Chemical fertilizers			1·3		10·7		20·7
Glass, wooden and non-metallic mineral products	63·2		—1·9	2·4	10·6		398·0
Forestry products				12·4	5·1		180·0
Motor transport .	113·0						406·0
Petroleum products	81·4	27·3		4·1	82·8		237·1
Crude oil . .					40·4		3·2
Rubber products	39·9		0·2	0·6	3·3		67·5
Rubber . .			0·9		2·3		
Chemicals .	179·2		5·8	9·9	111·2		284·0
Railways . .	89·0						454·0
Electricity .	11·1	4·7	—2·1[a]				103·0
Coal . .	6·1		2·3	1·8	0·1		109·0
Others . .	185·3[b]			7·3	11·1		
Total rows 1-31 .	7958·1	520·	231·1	468·1	1090·5	2002·0	
Value added .		860·0					13734·2[e]
Margin .	4646·8[c]			164·8		276·0	
Value of output	12604·9	1380·0	231·1	632·9	1090·5	2278·0	14795·8

(*a*) represents adjustment for exaggerated industrial consumption shown in table.
(*b*) inclusive of margin.
(*c*) inclusive of "others".
(*d*) row total is less by 498·0 than column total if entries in row 22 and 28 are considered.
(*e*) gross value added.

APPENDIX J: NET SURPLUS ON CURRENT ACCOUNT OF CENTR AND STATE GOVERNMENTS: 1960-61—1975-76.

Separate statements have been prepared for receipts and expenditu of the States and the Centre after cancelling all transfers from the Centr to the States and *vice-versa.* The receipts (Table J. 1) and expenditu (Table J. 2) have been projected separately after taking into accou several factors like growth of tax revenues at 1960-61 rates *i.e.* exclusiv of additional taxation imposed during the first four years of the Thir Plan and its relationship to national income, trends in expenditure und different heads, etc. To the extent possible the receipts and expenditu accruing due to special factors have been eliminated.

Certain limitations of the estimates may be noted. Firstly, the pictu of resources relates only to the Centre and States. The finances of th local bodies are left out for lack of adequate data. This omission, how ever, is not likely to materially alter the overall picture because the loc bodies meet the major part of their expenditure through assistance fr Centre and States. Secondly, the paper does not deal with the probab effect of any enhanced indirect taxation and future increase in the pri of public sector products and their effects on general prices.

Balance from revenue account for investment

Balance from revenue account represents the difference betw revenue receipts and the revenue expenditure (both plan and non-pla The estimate of revenue receipts presented in the detailed table is terms of 1960-61 rates of taxation. The yield from the additional taxat levied in each plan period is shown separately as additional taxati The presentation of the estimate of revenue receipts as shown here diff from the usual budgetary procedure in that the transfers from capi account to revenue shown as receipts in the budgets of the Centre States are excluded as these do not represent the current revenues the public sector. Similarly transfers from revenue to capital have b excluded from the estimates of revenue expenditure. These adjustme are necessary in order to find out the correct order of savings on reve account. The revenue expenditure given here is both for plan as well non-plan schemes. The plan outlays on revenue account are not gi separately.

Revenue Receipts

A projection of the revenue receipts under each individual head is given in Table J. 1. Briefly the picture that emerges is as follows:—

TABLE J (a):—*Revenue receipts of the Centre and the States, India*: 1960-61, 1965-66, 1970-71 *and* 1975-76 *at* 1960-6I *rates of taxation*.

(Rs. million)

	heaad	1960-61	1965-66	1970-71	1975-76
	(1)	(2)	(3)	(4)	(5)
1	Tax revenue	13840	19570	28710	43080
2	direct taxes	3980	6080	8730	12890
3	income and corporation taxes	2780	4760	7250	11160
4	land revenue	970	1060	1110	1160
5	others	230	260	370	570
6	indirect taxes	9860	13490	19980	30190
7	excise duties	4710	6230	10030	16160
8	customs	1700	2120	2220	2320
9	others	3450	5140	7730	11710
10	Administrative Receipts	930	1270	1700	2270
11	Semi-commercial enterprises[1]	810	1490	2040	2830
12	Interest	1180	3100	6120	9500
13	Currency and mint	480	600	840	1180
14	Miscellaneous	350	300	350	400
15	Total receipts	17590	26330	39760	59260

[1] Include : forests, irrigation works, multipurpose river schemes, broadcasting, Kolar gold ines, opium and civil works.

The above estimates have been derived on the following basis:

Indirect taxes

The tax revenue (particularly under major heads) has been projected taking the actual yield in 1962-63 as the starting point. The actual yield from taxes is generally higher than that assumed in the budget estimates. In projecting the receipts reliance has been also placed on the observed relationship between the growth in taxation (at existing rates) and the growth in income.

Deducting the additional taxation levied in 1961-62 and 1962-63, the actual yield of income and corporation taxes has, on the basis of the past trend, been projected at the rate of 8 per cent upto 1966-67, and 9 per cent thereafter.

Under land revenue only a nominal increase of Rs. 10 million a year has been taken. This increase is expected to arise out of minor adjustments in rates that may take place for rationalising the rates and cesses and by possible increases in area under irrigation and under crops on which the rates of land revenue are higher.

The revenue from other direct taxes *i.e.* expenditure tax, agricultural income-tax, wealth tax, estate duty and gift tax has also been assumed to grow in line with the growth in income and corporation tax, *i.e.* 8 per cent upto 1966-67 and 9 per cent thereafter.

On the basis of the above calculations revenue from direct taxes is expected to increase from 3980 million in 1960-61 to Rs. 12890 million in 1975-76.

Indirect Taxes

The revenue from union excise duties has been projected by relating it to the increase in production of excisable commodities. The actual yield under excise revenue in 1962-63 which was Rs. 450 million higher than the revised estimates has been taken as the basis for projection, The future increase in revenue from union excises has been related to targets of physical production of the excisable commodities at the end of the Third and Fourth Plan. The average annual increase on the basis of the physical output postulated for the Fourth Plan works out to 11 per cent a year [see Table J (1) attached]. But in order to allow for possible shortfalls in productions a growth of 10 per cent per year has been provided for the Fourth Plan. The corresponding annual increase during the Third Plan is taken to be 8 per cent.

Yield from sales tax is expected to grow at the rate of 7 per cent per annum upto 1965-66, and 9 per cent per annum thereafter. The types of commodities on which the States levy sales tax are broadly similar to those on which central excises are levied except that the consumer goods have a higher proportion of the total in case of sales taxes than in excise duties. Since these goods are expected to grow at a somewhat lower rate, the rate of growth under sales taxes is taken somewhat less than under excise duties.

Revenue from motor vehicles tax and passenger and goods tax depends directly upon the number of vehicles in operation. On the basis of the anticipated gowth of passenger and goods traffic, it is estimated that vehicles in operation would increase by 100 per cent during 1965-66 to 1970-71 and 75 per cent during the next 5 years. Therefore, receipts from these taxes are also expected to increase by 100 per cent in the Fourth Plan period and by 75 per cent in the Fifth.

Revenue from electricity duty depends upon the rate of duty on different categories of consumers and the consumption of power by each category. It is difficult to anticipate precisely the likely consumption by different groups in 1970-71 and 1975-76. In estimating revenue from this source, it has been tentatively assumed that revenue will increase in proportion to the increase in consumption of electric power which is expected to increase by about 100 per cent each during the Fouth Plan and the Fifth Plan.

Under customs, the increase in revenue is expected to be nominal *i.e* about Rs. 20 million a year. This increase is anticipated as a result o the progressively large imports anticipated it each plan period, thoug the order of the increase anticipated is small.

State excises are estimated to grow at 4 per cent per year upto 1966-6 and 5 per cent a year thereafter. Entertainment tax and the yield unde stamps and registration duties are expected to grow at 6 per cent pe year, while the revenue from other taxes is assumed to grow at 5 pe cent per annum upto 1970-71 and 6 per cent upto 1975-76.

The net outcome is summarised below:

(Rs. million

	1960-61	1965-66	1970-71	1975-76
(1)	(2)	(3)	(4)	(5)
indirect taxes	9860	13490	19980	30190
direct taxes	3980	6080	8730	12890
total taxes (at 1960-61 rates)	13840	19570	28710	43080
additional taxes (Third Plan)	..	7700*	10700	14900
	13840	27270	39410	57980
taxes as percent of projected national income**	9·8	15·1	15·1	15·5

*Of which Rs. 7000 million is on account of additional taxes levied upto 1964-65.
**Excluding any taxes levied after 1965-66.

ministrative Receipts

Administrative receipts represent receipts arising out of the working various administrative departments by way of fees, fines and other rges levied by the departments. Receipts from these sources which 1960-61 amounted to Rs. 930 million are expected to increase in the gregate by about 5 per cent a year upto 1965-66 and 6 per cent thereafter ing total revenue of Rs. 1270 million in 1965-66, Rs. 1700 million in 0-71 and Rs. 2270 million in 1975-76. These increases are considerably s than the total increase in expenditure assumed under these heads.

erest Receipts

Interest receipts have been derived by estimating the likely interest ment by public sector enterprises and other borrowers from the ernment. In case of the public sector enterprises interest has been culated on the basis of the estimated investment for each industry both fixed as well as in the working capital. It has been assumed that the d as well as the working capital will be fully provided through the get. It has further been assumed that in future there would be no atorium on interest payment and that interest would be charged from year the loan is granted to an enterprise. To the extent the working ital is provided through the banking system, the interest liability he enterprises to the Government will be reduced and the receipts er this head will go down. In addition credit has been taken for rest receipts from investment on irrigation and multi-purpose schemes ch have not been treated as an enterprise. Taking all these receipts account, interest receipts are expected to increase from Rs. 1180 ion in 1960-61 and Rs. 3100 million in 1965-66 to Rs. 6120 million in -71 and Rs. 9500 million in 1975-76.

rency and Mint

f these two heads receipts from currency alone are expecetd to grow. receipts from currency mainly represent the profits of the Reserve k transferred to Government. The Reserve Bank profits arise mainly consequence of the Reserve Bank's lendings to the public and the ate sector. In these estimates full credit has not been taken for increase in profits of the Reserve Bank. It has been assumed that the profits of the Reserve Bank transferred to the Budget of the Government will increase only to the extent the outstanding treasury bills ar increased for providing non-inflationery deficit finance to the Governmen The interest realized from private sector may go to meet the increase administrative expenditure and for building up reserves. On this basi receipts under this head are expected to increase from Rs. 600 millio in 1965-66 to Rs. 840 million in 1970-71 and Rs. 1180 million in 1975-76.

Semi-commercial enterprizes

This group consists of various semi-departmental enterprises, such a forests, irrigation, multi-purpose river schemes, civil works, broadcastin etc. As a group, these enterprises are expected to yield Rs. 1,490 millio in 1965-66, Rs. 2,040 million in 1970-71, and Rs. 2,830 million in 1975-7 as against Rs. 810 million 1, in 1960-61. Headwise increases are given i Table J.1. Receipts under Forests are expected to grow at the rate o 8 per cent per year, while yield from irrigation and multipurpose rive schemes is expected to grow at the rate of 5 per cent per year. While th receipts under forests have been projected on the basis of the past tren those under irrigation and multi-purpose schemes have been related t the anticipated increase in the area under irrigation.

Miscellaneous Receipts

These receipts are aggregate of various small items and their tot adds up to relatively small figure. It is difficult to anticipate the yie from them in future. These have been taken at Rs. 300 million in 1965-6 Rs. 350 million in 1970-71 and Rs. 400 million in 1975-76.

Taking all the items together, revenue receipts are anticipated to ri from Rs. 26330 million in 1965-66 to Rs. 39760 million in 1970-71 a Rs. 59260 million in 1975-76, an increase of nearly 125 per cent in years or over 8 per cent a year. The growth does not take into accou the revenue from additional taxation which is discussed separately.

Revenue Expenditure

Total revenue expenditure of the Centre and the States is expect to increase from Rs. 16720 million in 1960-61 to Rs. 31780 million in 1965- Rs. 44170 million in 1970-71 and Rs. 63000 million in 1975-76. Details the anticipated increases under each head are available in Table J.3. T increases under broad groups are indicated below:

TABLE J. (*b*) Consolidated estimates of Revenue Expenditure of the Centre and the States, India : 1960-61, 1965-66, 1970-71 and 1975-76.

(Rs. milli

	head	1960-61	1965-66	1970-71	1975-76
	(1)	(2)	(3)	(4)	(
1	Direct demands on revenue . . .	780	1030	1310	1
2	Interest on debt	2030	3800	6100	8
3	Defence and border roads	2900	9000	10100	11
4	Other non-development expenditure .	3620	5540	6820	8
5	Development expenditure including revenue plan	7390	12410	19840	32
6	Total Revenue Expenditure. . . .	16720	31780	44170	63

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[1] The revenue in 1960-61 is not comparable with the figures for the subsequent years. T is because whereas the figures for 1960-61 are net of working expenses, those for later year ross of these expenses.

As pointed out earlier, in order to arrive at an accurate estimate of savings out of revenue, some of the items which, according to normal budgetary practice, are shown as items of expenditure, have been excluded. The items excluded are appropriations for reduction and avoidance of debt, write backs to revenue of expenditure incurred on capital account in earlier years, and transfers to funds. These outlays are mere transfers to capital and do not represent genuine revenue expenditure. These adjustments do not make any difference to total estimate of resources. This makes only a presentational difference; for instead of showing these items as resources on capital account, these are shown here as resources on revenue account.

The basis of estimates under different heads are stated below:

Direct demands on revenue.—Direct demands on revenue represent the direct expenditure involved in collecting tax revenue from different sources. In estimating expenditure under this head an increase of 5 per cent a year over 1965-66 has been taken. This increase in expenditure is expected to take care of the increase in salaries as a result of increments in pay and the necessary increases in staff consequent upon the adoption of new tax measures and for assessing larger number of people. Thus expenditure under this head is anticipated to increase from Rs. 780 million in 1960-61 and Rs. 1030 million in 1965-66 to Rs. 1310 million in 1970-71 and Rs. 1650 million in 1975-76.

Interest and appropriations.—Interest liability has been worked out on the basis of total anticipated increase in interest bearing debt of the Central and the State Governments during the Fourth and the Fifth Plans. It is estimated that interest bearing liability of the Centre and the States will increase by Rs. 58,000 million in the Fourth Plan and by Rs. 64.000 million in the Fifth Plan made up somewhat as follows:—

(Rs. million)

	Fourth Plan	Fifth Plan
market borrowings	15000	26000
small savings and compulsory deposits	7500	8500
provident funds	4000	6000
external assistance	22000	10000
deficit financing	9500	13500
	58000	64000

Calculated at the rate of about 4 per cent, interest liability is expected to increase from Rs. 3800 million in 1965-66 to Rs. 6100 million in 1970-71 and Rs. 8600 million in 1975-76.

Appropriations for reduction and avoidance of debt represent transfers from revenue to capital for meeting future repayment of public loans. Since it may be difficult to meet full repayments out of the resources of one single year, the appropriations are made every year and kept in a sinking fund until the loans mature. There is however no uniform policy adopted in the regard. The Centre makes no appropriations except for a token transfer of Rs. 50 million to capital which again is not put into any sinking fund but becomes available as capital resource In the case of States, while some States make full provision out of revenue for transfer to sinking funds, others transfer a part of the total while certain others make no appropriations. In fact, appropriations have meaning only if the public authorities had no intention of raising any loans in the future. When the actual policy is to raise loans every year in excess of repayments falling due to appropriations from revenue lose much of their justification as the repayments can be met out of the fresh loans raised. Further since these do not represent any genuine revenue expenditure, for purpose of estimating saving out of current revenues these appropriations have been excluded from the estimate of revenue expenditure.

Defence and border roads.—Due to the Chinese aggression in October 1962, expenditure on defence, which was only Rs. 2810 million in 1960-61 has risen to Rs. 8540 million in 1964-65 (Budget). We have assumed defence expenditure to be Rs. 8750 million in 1965-66, Rs. 10,000 million in 1970-71 and Rs. 11.250 million in 1975-76.

Since 1960, the expenditure on border roads has also shown a sharp increase, rising from Rs. 85 million in 1960-61 to Rs. 220 million in 1964-65. The entire expenditure is at present outside the Plan. It is however, assumed that in the Fourth Plan only strategic roads will be kept outside the Plan and shown in capital budget. A provision of only Rs. 100 million a year has been made on account of border roads outside the Plan.

Other non-development expenditure.—Expenditure on civil administration is assumed to grow at 5 per cent per year. This increase in expenditure is expected to be adequate for meeting the increases in pay and emoluments of staff as a result of the annual increments as well as the minimum increases in staff.

The growth in expenditure under stationery is taken at 8 per cent, external affairs at 5 per cent and on miscellaneous items at 3 per cent. Expenditure on national emergency which is Rs. 130 million now is nominally put at Rs. 140 million in 1965-66, Rs. 150 million in 1970-71 and Rs. 160 million in 1975-76. As a result of the increases envisaged, the expenditure under non-development heads is estimated to go up from Rs. 3620 million in 1960-61 and Rs 5540 million in 1965-66 to Rs. 6820 million in 1970-71 and Rs. 8430 million in 1975-76.

Development expenditure.—This head includes both maintenance expenditure on account of the previous plan as well as the revenue plan expenditure during the plan period itself. For different heads different rates of growth are taken. In view of the great importance of rapid advance in education and the constitutional directive to provide compulsory and free education to children upto 14 years, growth of educational expenditure has been provided at a cumulative annual rate of 14 per cent. For scientific research the rate is even faster. Medical and health, including water supply and sanitation as well as family planning have provision for increased expenditure at the same high rate of 14 per cent per year. In respect of agriculture, an annual cumulative increase of 7 per cent has been provided. For irrigation an annual increase of 3 per cent has been provided. For forests the estimated annual increase is of the order of 6 per cent while for other social and development schemes excluding industries it is 6 per cent. In the case of civil works the increase is taken at 5 per cent. Expenditure on industries is expected to grow at 8 per cent per year. In aggregate, the development expenditure is expected to rise from Rs. 12,410 million in 1965-66 to Rs. 19,840 million in 1970-71 and Rs. 32,970 million in 1975-76.

The revenue plan expenditure underlying these estimates is about Rs. 22,000 million in the Fourth Plan and about Rs. 32,000 million in the Fifth Plan.

Taking all the heads together, revenue expenditure will increase from Rs. 16,720 million in 1960-61 to Rs. 31,780 million in 1965-66, Rs. 44,170 million in 1970-71 and Rs. 63,000 million in 1975-76.

At 1960-61, rates of taxation, the balance on revenue account is given in row 3 of the table below. The effect of Third Plan additional taxes is shown in row 4.

(Rs. million)

	1960-61	1965-66	1970-71	1975-76
1 total revenue expenditure	16720	31780	44170	63000
2 with revenue receipts at	17590	26330	39760	59260
3 balance on revenue account for investment .	(+)870	(—)5450	(—)4410	(—)3740
4 balance on revenue account after adjusting for third plan taxes	(+)870	(+)2250	(+)6290	(+)11160

TABLE J.I: ESTIMATES OF REVENUE RECEIPTS OF THE CENTRE

	heads	1960-61 (actuals)	1961-62 (actuals)	1962-63 (likely actuals)	1963-64
	(1)	(2)	(3)	(4)	(5)
1	Tax Revenue	13840	14810	16310	17330
2	direct taxes	3980	4400	5020	5350
3	income and corporation tax	2780	3200	3780	4080
4	land revenue	970	960	1030	1040
5	agricultural income tax	100	100	880	90
6	estate duties, wealth, gift & expenditure tax	130	140	130	140
7	indirect taxes	9860	10410	11290	11980
8	central excises	4160	4370	4940	5340
9	customs	1700	1840	2060	2080
10	sales tax	1640	1790	1850	1980
11	entertainment tax	130	140	140	150
12	motor vehicles tax & tax on passengers and goods	430	430	510	550
13	stamps and registration	470	490	500	530
14	electricity duties	130	140	110	120
15	state excises	550	590	580	600
16	other indirect taxes	650	620	600	630
17	Non-Tax Revenue	2580	2960	3140	3290
18	forests	580	630	670	720
19	irrigation	40	240	270	280
20	multipurpose river schemes	...	20	40	70
21	currency and mint	480	540	550	560
22	kolar gold mines	..	..	10	20
23	civil administration[1]	930	1010	1110	1150
24	civil works	120	130	130	130
25	broadcasting	30	40	40	40
26	opium	50	50	40	50
27	miscellaneous	350	300	280	270
28	Interest	1180	1700	1950	2430
29	railways	570	630	690	830
30	post and telegraph	40	50	60	70
31	others	570	1020	1200	1530
	GRAND TOTAL	17600	19470	21400	23050

1/ Includes civil administration, agriculture, education, industries, medical and public health

ND THE STATES, 1960-61 TO 1975-76

(Rs. million)

1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
18410	19570	21030	22710	24520	26510	28710	43080
5700	6080	6490	6980	7510	8090	8730	12890
4410	4760	5140	5600	6100	6650	7250	11160
1050	1060	1070	1080	1090	1100	1110	1160
90	100	110	120	130	140	150	230
150	160	170	180	190	200	220	340
12710	13490	14540	15730	17010	18420	19980	30190
5770	6230	6850	7540	8290	9120	10030	16160
2100	2120	2140	2160	2180	2200	2220	2320
2120	2270	2470	2690	2930	3190	3480	5360
160	170	180	190	200	210	220	290
590	640	730	840	960	1100	1280	2240
560	590	620	660	700	740	780	1050
130	140	160	190	220	250	280	560
620	640	670	700	730	770	810	1030
660	690	720	760	800	840	880	1180
3430	3660	3880	4110	4390	4650	4930	6680
780	840	910	980	1060	1140	1230	1800
290	300	310	330	350	370	390	500
70	80	80	90	90	100	100	130
580	600	640	680	730	780	840	1180
20	30	30	30	40	40	40	50
1210	1270	1350	1430	1520	1610	1700	2270
140	140	150	150	160	160	170	220
40	50	50	50	60	60	60	80
50	50	50	50	50	50	50	50
250	300	310	320	330	340	350	400
2670	3100	3550	4050	4640	5330	6120	9500
910	1020	1110	1200	1300	1410	1540	1840
80	80	90	90	100	110	120	170
1680	2000	2350	2760	3240	3810	4460	7490
24510	26330	28460	30870	33550	36490	39760	59260

other social and development schemes.

TABLE J.2: ESTIMATED REVENUE FROM UNION EXCISE INDI

	commodity	unit
	(1)	(2)
1	petroleum products (including import duty)	mill. tonnes
2	sugar	thou. tonnes
3	matches	mill. boxes
4	steel ingots	thou. tonnes
5	tyres and tubes	thou. nos.
6	tobacco	thou. tonnes
7	vegetable produdct (vanaspati)	thou. tonnes
8	coffee	thou. tonnes
9	tea	thou. tonnes
10	cotton fabrics	mill. metres
11	artificial silk fabrics	mill. Rs.
12	cement	thou. tonnes
13	footwear	mill. pairs
14	soap	thou.. tonnes
15	woollen fabrics	mill. metres
16	electric fans	thous. nos.
17	electric bulbs	mill. nos.
18	electric batteries	mill. nos.
19	paper and paper board	thou. tonnes
20	paints and varnishes	thous. tonnes
21	vegetable non-essential oils and oilseeds	mill . tonnes
22	rayon and synthetic fibres & yarn	thou. tonnes
23	motor vehicles	thou. nos.
24	aluminium	thou. tonnes
25	tin plate	thou. tonnes
26	pig iron	thou. tonnes
27	cycles, parts thereof	mill. Rs.
28	internal combustion engines	thou. nos.
29	electric motors	thou. kw.
30	soda ash	thou. tonnes
31	caustic soda	thou. tonnes
32	dyestuffs	thou. tonnes
33	patent or proprietary medicines	mill. Rs.
34	cosmetics	milll Rs.
35	glass and glassware	thou. tonnes
36	copper	thou. tonnes
37	zinc	thou. tonnes
38	airconditioning machinery	thou. nos.
39	wireless receiving sets	thou. nos.
40	refrigerators	thou. nos.
41	plastics	thou. tonnes.
42	salt cess	thou. tonnes
43	coal cess	thou. tonnes
44	miscellaneous]	
	Total	

DUTIES AT 1960-61 RATES.

1960-61—1970-71

(Rs. million)

1960-61			1965-66		1970-71	
production	excise	rate Rs.	production	excise	production	excise
(3)	(4)	(5)	(6)	(7)	(8)	(9)
8	1234	154/t	14	2156	27	4158
3060	551	180/t	3570	643	5000	900
5400	181	33·5/th. box	6048	203	7200	241
3268	131	40/t	7736	309	16668	667
27342	135	5/no.	42800	214	92000	460
428	594	1388/t	548	761	675	937
340	56	165/t	510	84	725	120
54	14	259/t	80	21	95	25
317	75	236/t	390	92	470	111
4616	630	136·5/th. metres	5075	693	6400	874
380	21	index.	475	26	600	33
8000	184	23/t.	12000	276	23000	529
54·5	15	0·27/pairs	74	20	100	27
142	24	169/t	220	37	320	54
13	9	0·69/metre	32	22	55	38
1060	12	11/no.	2500	28	4000	44
42	7	0·17/no.	118	20	200	34
215	19	0·09/no.	326	29	552	50
347	84	242/t	670	162	1200	290
53	14	264/t	150	40	270	71
6·6	112	index.	7·5	127	11·2	190
43	28	651/t	100	65	190	124
73	80	1096/no.	139	152	310	340
19	12	632/t.	68	43	240	152
80	14	175/t.	250	44	350	61
1120	10	9/t.	1220	11	3500	32
54	9	index.	75	13	150	25
43	15	349/no.	66	23	110	38
540	8	15/kw.	2065	31	7500	113
147	0·2	1·32/t.	340	0·4	650	0·9
99	0·2	2·02/t	300	0·6	600	1·2
5	0·9	180/t	10	2	13	2
600	3	index	1750	9	3000	15
90	0·7	index	150	1	250	2
229	1	4/t.	405	2	770	3
9	0·7	78/t	36	3	70	5
3·5	0·1	28/t.	7	0·2	20	0·6
11	0·1	9/no.	40	0·4	80	0·7
280	0·6	2·14/no.	650	1·4	1500	3·2
11	0·1	9/no.	30	0·3	100	0·9
10	0·8	80/t.	75	6	270	22
3500	7	2/t.	6200	12	8000	16
52930	54	1/t.	89000	89	140000	140
	60·5			85		120
	4408			6557		11071

TABLE J.3: ESTIMATES FOR REVENUE EXPENDITURE OF

	heads	1960-61 (actuals)	1961-62 (actuals)	1962-63 (likely actuals)	1963-64
	(1)	(2)	(3)	(4)	(5)
1	direct demands on revenue	780	850	900	930
2	interest on debt	2030	2420	3000	3200
3	defence			4740	8080
4	border roads	2900	3300	210	260
5	non-development expenditure	3620	4160	4970	5120
6	civil administration	2120	2260	2490	2620
7	currency and mint	100	120	200*	120
8	national emergency	..	..	40	130
9	famine relief	180	200	140	70
10	external affairs	100	120	130	150
11	stationery and printing	170	180	190	200
12	miscellaneous	950	1280	1780	1830
13	developmental expenditure	7390	8700	9650	10520
14	forests	250	280	330	350
15	agriculture 1/	850	840	970	1040
16	irrigation	140	530	590	610
17	education	2150	2610	2780	3170
18	industries	580	570	750	810
19	medical and public health	900	1040	1180	1270
20	other social and developmental sch. 2/	1130	1140	1420	1500
21	civil works	870	1030	1000	1050
22	misc. development schemes	520	520	490	520
23	multi-purpose river schemes	..	140	140	200@
	GRAND TOTAL	16720	19430	23470	28110

*includes Rs. 91 million as payment to RBI
@the sudden increase is due to the change
1 including agriculture, animal husbandry
2 including misc. departments, scientific
and NES and local development works.

E CENTRE AND THE STATES, INDIA 1960-61—1975-76.

(Rs. million)

1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1975-76
(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
980	1030	1080	1130	1190	1250	1310	1650
3450	3800	4250	4700	5200	5650	6100	8600
8540	8750	9000	9250	9500	9750	10000	11250
220	250	100	100	100	100	100	100
5320	5540	5770	6020	6280	6540	6820	8439
2750	2890	3030	3180	3340	3510	3690	4700
120	130	130	130	140	140	150	180
130	140	140	150	150	150	150	160
70	50	50	50	50	50	50	50
160	170	180	190	200	210	220	280
210	230	250	270	290	310	330	480
1880	1930	1990	2050	2110	2170	2230	2580
11420	12410	13580	14890	16370	18010	19840	32970
370	390	410	430	460	490	520	700
1110	1190	1270	1360	1460	1560	1670	2340
630	650	670	690	710	730	750	870
3610	4110	4680	5330	6080	6930	7900	15300
870	940	1010	1090	1180	1270	1370	2000
1380	1500	1710	1950	2220	2530	2880	5550
1590	1680	1780	1880	1990	2110	2240	3000
1100	1150	1210	1270	1330	1400	1470	1880
550	580	610	650	690	730	770	1020
210	220	230	240	250	260	270	310
29930	31780	33780	36090	38640	41300	44170	63000

ithdrawal of Escudo currency.
budgetory practices.
ooperation
ments, ports and pilotage community development

APPENDIX K: THE ESTIMATION OF SURPLUSES OF PUBLIC ENTERPRISES: 1960-61 to 1975-76.

The output of the public enterprise which forms the basis of the e mates corresponds to the outline of the Fourth and the Fifth Plans as out in the text. To the extent possible a realistic view has been ta of the lags between investment and output. The enterprises are assu to be run reasonably efficiently. The estimated surpluses are wor out on the basis of specified rates of return on capital employed. If present prices of certain public enterprise commodities and services (electric power, railway transport) are unduly low, despite their nor working efficiency, and cannot yield the surpluses as estimated, assumption is that suitable adjustment in such prices will be made the earliest possible opportunity. The question of repercussion of th price changes on the rest of the economy has not been dealt with. Th are certain other limitations because of which the estimates are ne sarily rough.

The surpluses of the public sector enterprises available for inv ment, as defined in this paper are the total net profits of all enterpr (*i.e.* profits net of interest payments and corporate taxation) and difference between the depreciation provision and the actual outlay in red on replacement of existing assets.

While the definition of internal resources is clear, the actual esti tion of the internal resources of the enterprises is beset with sev difficulties. Firstly, it is difficult to ascertain the actual outlay on de ciation. The depreciated asset may vary from the asset which repl it—in quality, precision and scale, etc. There is also the problem ascertaining the price of the replaced asset. Thirdly, there is the ques of measuring the profit. Should it be related to capital employed; i what should constitute the definition of capital employed? Should fixed investment be taken net or gross of depreciation? Should receivable and invested funds be excluded or not? The price cha make this task of estimating profit all the more difficult.

In estimating the internal resources of public sector undertaking this paper certain simplifying assumptions have been made. It has assumed that depreciation outlay will be mainly incurred at the en the full life of the plant. The depreciation provision is related to life of the plant which has been calculated separately for each m industry. As far as possible the replacement cost is taken at exi prices, the capital employed is taken to be the sum of gross fixed inv ment plus working capital.

The return in engineering and chemical industries in the private se industries in which the public sector is playing a growing part is fact, much higher than the average for all enterprises. In view of there appears to be little justification why the public sector enterp should not make a return of at least 10 per cent in manufacturing about 8 per cent in transport and communication.

The greater is the role of the public sector in the development of country, the greater is its responsibility to provide increasing resour- for development out of its productive activities. The present position this regard leaves much to be desired and the returns on investments de, for one reason or another contnue to be meagre. This, however, not be accepted as inevitable. The success of our development pro- mmes is linked vitally with the success and efficient operation of licly owned enterprises. If they are effective and efficient, planning ls will be achieved on time at costs and funds will become available further investment and future growth. If they perform badly, earn- s so necessary for further investment and growth will not be forth- ing. In the Indian situation, rapid development will inevitably l for large expansion of the public sector in vital sectors of the economy electricity, oil, coal and other minerals, steel, other metals, machinery all kinds, chemical fertilisers and other heavy chemicals, transporta- n etc. A substantial part of the total investment will be devoted to rapid growth of these sectors which will automatically mean large re of investment in public enterprises. An adequate rate of return capital must be insisted upon in the interest of the growth of the nomy.

There is no easy way of determining what rate of return may be aimed In a study of the Reserve Bank of India, the gross profits of large npanies as per cent of net worth and borrowed capital is shown as lows: —

55-56	1956-57	1957-58	1958-59	1959	1960	1961
13·8%	13·0%	10·1%	10·7%	13·1%	13·5%	13·6%

In estimating the surplus, separate estimates have been made for lways, Posts and Telegraphs, Road Transport, Electricity Undertakings, el, Fertilizers, Oil Exploration, Refining and Distribution, Machine lding and Mining. A uniform method of estimating the return and depreciation outlay has been adopted for Steel, Fertilizers, Oil, chine Building, Mining and 'Other Industries'. Return has been cal- ated on the total outlay employed three years earlier on the assump- n that it generally takes about two years for the investment to start lding production and return and one more year to give full production. respect of Steel, however, return has been calculated on the total lay incurred four years earlier, assuming that in this case it would e two years for a plant to reach full production. For Railways, Posts Telegraphs and Road Transport return has been calculated on total estment as at the end of each year. Depreciation provision has been culated on the fixed investment made two years earlier except in the e of Railways, P and T and Road Transport, for which, depreciation vision has been calculated on the investment as at the end of the each r.

Depreciation outlay has been estimated on the basis of the life of the nt. For example if the life of the plant is taken to be twenty years, then whole of the investment made twenty years earlier is supposed to e been depreciated. This is rather an oversimplified method of king out the depreciation outlay. For while the average life of the erprise may be twenty years, various parts of machinery would have different life spans. The depreciation outlay in all these details c however, be worked out only on the basis of a detailed knowledge of pla and equipment in an enterprise and their life. Such information, ho ever, is not readily available and therefore, no such detailed analy has been attempted.

In estimating the resources of public undertakings available for inve ment, full allowance has been made for payment of interest. Except the case of Railways and P and T it has been assumed that the en profits other than depreciation resources would be transferred to exchequer for financing future investments.

Corporate taxation has been calculated at 50 per cent in respect of non-departmental public undertakings. A tax holiday for five ye from the date of operation of the undertaking has been assumed for industrial enterprises other than Road Transport undertakings. In case of Railways and P & T, no provision for taxation has been ma while in the case of Road Transport, taxation is calculated on half of retained profits because the transport undertakings run departmenta by the State Governments which account for nearly 50 per cent of total investment, are not liable to tax.

Interest has been estimated at the rate of 4·5 per cent per annum 1965-66 and 5 per cent per annum thereafter for all enterprises other th Electricity Undertakings and Road Transport. In their cases, the rate interest has been taken at 5 per cent which is the rate at which lo are given by the State Government to the Electricity Boards and Tra port Undertakings. It has been further assumed that except for Railwa Posts and Telegraphs and Electricity undertakings, 50 per cent of investment of all enterprises would be financed by loans and 50 per c by share capital. In case of Railways, Posts and Telegraphs and E tricity Undertakings, the entire financial assistance is expected to provided by way of loans.

The estimates of retained profits in respect of individual enterpri are described below:—

Railways

Outlay under Railways, net of renewals and replacements, is e mated at Rs. 15,000 million during the Fourth Plan 20,000 million in Fifth Plan as against Rs. 12,000 million during the Third Plan. To outlay by the end of 1960-61 is expected to be Rs. 19,000 million and the above assumption about the outlay, it would be Rs. 66,000 million the end of 1975-76. Total capital at charge in 1960-61 is put at Rs. 15, million. After deducting the contribution of about Rs. 2,400 mil made by Railways in the Third Plan about Rs. 6,500 million in the Fou Plan and Rs. 13,500 million in the Fifth Plan from the total investm the capital at charge on which interest is calculated is expected to Rs. 25,200 million in 1965-66, Rs. 33,700 million in 1970-71 and Rs. 40 million in 1975-76.

Return has been calculated at the rate of 6 per cent on total ou in 1965-66, 7 per cent in 1970-71 and 8 per cent in 1975-76 and deprecia provision at 3 per cent per annum. As in the Third Plan deprecia outlay has been taken as equal to the depreciation provision. Divid payment has been calculated at 4·5 per cent on capital at charge, in 1965-66 and 5 per cent thereafter exclusive of the capital employed on strategic lines on which no interest is payable. On this basis the total resources of the Railways would be Rs. 840 million Rs. 1680 million and Rs. 3440 million in 1965-66, 1970-71 and 1975-76 respectively. Details may be seen in table below:—

TABLE *K* 1.—*Surplus of Railways*

(Rs. million)

	item	end 1965-66	end 1970-71	end 1975-76
(0)	(1)	(2)	(3)	(4)
1	total investment	31000	46000	66000
2	capital at charge	25200	33700	40200
3	return on total investment	1860	3220	5280
4	dividend payment on capital at charge . . .	1020	1540	1840
5	profits retained (3-4)	840	1680	3440
6	depreciation provision @ 3 per cent on total investment	930	1380	1980
7	depreciation outlay	930	1380	1980
8	depreciation resources (6-7)	..	..	..
9	total resources available (5+8)	840	1680	3440

As against the estimated resources of Rs. 840 million for 1965-66, the amount taken credit for in the Third Plan is Rs. 200 million. Adding the estimated revenue of Rs. 450 million from additional taxation, the total amount taken credit for would be Rs. 650 million.

Posts and Telegraphs:

Investment in P & T is assumed to increase from Rs. 2100 million in 1965-66 to Rs. 3600 million in 1970-71 and Rs. 5800 million in 1975-76. Interest has been calculated at the rate of 4·5 per cent on capital at charge during Third Plan and 5 per cent afterwards. The capital at charge is estimated at Rs. 1600 million in 1965-66, Rs. 2200 million in 1970-71 and Rs. 2800 million in 1975-76. In arriving at the capital at charge, the contribution of P & T during each plan period out of its own funds has been deducted from total investment. Depreciation provision and depreciation outlay have been calculated on the basis of their proportions to total investment in 1960-61, which were about 4·5 per cent for depreciation provision and about 3·2 per cent for depreciation outlay. Estimating return at 6 per cent for 1965-66, 7 per cent for 1970-71 and 8 per cent for 1975-76, the total resources under this head come to Rs. 80 million, Rs.

170 million and Rs. 360 million in 1965-66, 1970-71 and 1975-76 respectively. Details are shown in Table below:—

Table K. 3 Surplus of Electricity Undertakings ..

(Rs. million)

Sl. No.	item	end 1965-66	end 1970-71	end 1975-76
(0)	(1)	(2)	(3)	(4)
1	total investment	2100	3600	5800
2	capital at charge	1600	2400	3500
3	return on total investment	130	250	460
4	interest payment on capital at charge	70	120	170
5	profit retained (3—4)	60	130	290
6	depreciation provision @ 4·5% on total investment	90	160	260
7	depreciation outlay @ 3·2% on total investment	70	120	190
8	depreciation resources (6-7)	20	40	70
9	total resources available (5+8)	80	170	360

Surplus from Posts and Telegraphs taken credit for in the Third Plan estimates, is Rs. 60 million for 1965-66, as against Rs. 80 million worked out in Table K.2 above on the basis of 6 per cent rate of return on capital.

Power

Outlay on power in 1970-71 and 1975-76 has been worked out by adding to the estimated investment of Rs. 16,500 million in the public sector by 1965-66, the estimated investment in the Fourth Plan and the Fifth Plan. The investment is taken at Rs. 22,500 million for the Fourth Plan and Rs. 32,000 million for the Fifth Plan. These investments have been worked out in relation to the capacity target of 23·6 million Kw for 1970-71 and 40 million Kw assumed for 1975-76. The investment has been calculated at Rs. 2000 per Kw. It has been further assumed that investment of the order of Rs. 500 million and Rs. 800 million will be in the private sector during the Fourth and Fifth Plan respectively. Interest has been calculated at 5 per cent on total investment as reduced by the contribution made by electricity boards themselves.

Depreciation provision has been calculated at the rate of 2·75 per cent on the assumption that the average life of the Power Plant is about 35-36 years *i.e.* about 40 years for Hydro-stations and 30 years for Thermal stations. On the same assumption, therefore, depreciation outlay in a year is taken equal to the investment in power made 35-36 years earlier. Resources available on the basis of 10 per cent return on investment made three years earlier work out to Rs. 1050 million and Rs. 2870 million in 1970-71 and 1975-76 respectively. The estimate for 1965-66 at 10 per cent works out to Rs. 500 million as against Rs. 350 million provided in the Plan. The position is summed up in Table K.3 below:—

Table K. 3: Surplus of Electricity Undertakings.

(Rs.million)

	item	end 1965-66	end 1970-71	end 1975-76
(0)	(1)	(2)	(3)	(4)
1	outlay	16,500	39,000	71,000
2	return on investmnt made three years earlier (at 10%) .	1,050	2,320	4,950
3	interest payment	770	1,820	3,270
4	profits retained (2—3)	280	500	1,680
5	corporate taxation = 50% of retained profits after 5 years of tax holiday	70	140	250
6	net profits (4—5)	210	360	1,430
7	depreciation provision = 2·75% on investment made two years earlier	340	760	1,540
8	depreciation outlay	50	70	100
9	depreciation resources (7—8)	290	690	1,440
10	total resources available (6+9)	500	1,050	2,870
11	total outlay 3 years earlier	10,500	23,250	49,550
12	total outlay 2 years earlier	12,500	27,600	55,850

Road Transport

Fixed investment in road transport is expected to increase from Rs. 900 million in 1965-66 to Rs. 1900 million in 1970-71 and Rs. 3500 million in 1975-76. This is estimated on the assumption that 50 per cent of the additional buses in the Fourth and the Fifth Plan will be in the public ector.

On the basis of the anticipated increase in passenger traffic, the total umber of passenger buses is expected to increase by 50,000 in the Fourth lan and 80,000 in the Fifth Plan. The cost per vehicle is assumed at Rs. 40,000. This yield a total investment of Rs. 2000 million in the ourth and Rs. 3200 million in the Fifth Plan half of which would be n the public sector.

Working capital has been assumed at 10 per cent of the fixed capital. nterest payments have been calculated at 5 per cent on total investment ixed as well as working—as reduced by the contribution made by oad transport enterprises by way of difference between depreciation rovision and depreciation outlay. Taxation has been calculated on half f the profits of road transport. This is on the assumption and the proortion of investment between autonomous and departmental transport ndertakings will remain 50 : 50 as at present.

The average life of a motor vehicle is ten years. On this basis depreciation provision on fixed investment is taken at 10 per cent. Depreciation outlay, accordingly, is taken as equal to the fixed investment made ten years earlier. Total resources calculated at 10 per cent return would be Rs. 110 million in 1965-66 as against Rs. 60 million agreed with the States and included in the Third Plan. For 1970-71 and 1975-76, the resources are estimated at Rs. 210 million and Rs. 440 million as shown in Table K.4 below:—

Table K. 4: Surplus of Road Transport Undertakings.

(Rs. million)

	item	end 1965-66	end 1970-71	end 1975-76
(0)	(1)	(2)	(3)	(4)
1	total outlay[1]	1,000	2,100	3,850
2	fixed investment	900	1,900	3,500
3	working capital @ 10%	100	200	350
4	return on total outlay (at 10%)	100	210	390
5	interest payment @ 5%	40	100	130
6	profits retained (4—5)	60	110	260
7	corporate taxation 50% on half of the retained profits	10	30	70
8	net profits(6—7)	50	80	190
9	depreciation@ 10% on fixed investment . .	90	190	350
10	depreciation outlay	30	60	100
11	depreciation resources(9—10)	60	130	250
12	total resources available (8+11)	110	210	440

1. Including working capital which is taken at 10 per cent of the fixed investment.

Steel

Fixed investment on steel plants is estimated to be Rs. 14,400 millio and Rs. 13,500 million during the Fourth and the Fifth Plan respectively. These investments have been worked out in relation to targets of stee capacity of 20 million tonnes in 1970-71 and 30 million tonnes in 1975-76 It is also assumed that out of the total, investment of the order of Rs 12,300 million in the Fourth Plan and of Rs. 12,500 million in the Fifth Plan would be in the public sector. Adding the fixed investment of abou Rs. 12,000 million by 1965-66, total fixed investment in steel is expecte to be Rs. 24,300 million in 1970-71 and 36,800 million in 1975-76.

In the case of Tata and Indian Iron and Steel companies working capital as a per cent of gross fixed investment comes to 25 per cent Since investment in Hindustan Steel per ton of output is much highe than that for TISCO and IISCO, the rate of working capital to fixe investment for public sector undertakings is taken at 20 per cent. Inte rest has been calculated at 4·5 per cent upto 65-66 and 5 per cent there after on half of the investment as reduced by the resources met out o depreciation reserves. Depreciation provision and depreciation outlay have been calculated on the assumption that the average life of a steel plant is 20 years. Total resources calculated at 10 per cent return are shown in Table K.5 below:—

Table K. 5: Surplus of Steel Enterprises.

(Rs. million)

	items	end 1965-66	end 1970-71	end 1975-76
(0)	(1)	(2)	(3)	(4)
1	total outlay	14,400	29,150	44,150
2	fixed investment	12,000	24,300	36,800
3	working capital (@) 20% of fixed investment) . .	2,400	4,850	7,350
4	return on total outay)our years earlier . . .	890	1,660	3,170
5	interest payment	290	650	950
6	profits retained(4—5)	600	10,10	2,220
7	corporate taxation@ 50 per cent of retained profits after 5 years of tax holiday	70	300	500
8	net profit (6—7)	530	710	1,720
9	depreciation provision@ 5 per cent of fixed investment two years earlier	480	920	1560
10	depreciation outlay	..	..	..
11	depreciation resources(9—10)	480	920	1,560
12	total rasources available (8+11)	1,010	1,630	3280
13	total investment four years earlier	890	16,600	31,650
14	fixed investment two years earlier	955	18,300	31,150

It will be seen that on the basis of 10 per cent return the internal resources of steel plants in 1965-66 would be Rs. 1010 million as against Rs. 540 million provided in the estimates prepared by the Research Unit of the Savings Committee. For 1970-71 and 1975-76, the estimates work out at Rs. 1630 million and Rs. 3280 million respectively.

Nitrogenous Fertilizers

Fixed investment in the public sector under fertilizers during the Fourth and the Fifth Plan has been based on the following physical targets:—

(thousand tons N)

	1965—66	1970-71	1975-76
(1)	(2)	(3)	(4)
Public sector	460	1,550	2,800
Private sector	180	450	700
Total	640	2,000	3,500

It has been assumed that the output of nitrogenous fertilizers in the public sector would increase by 1100 thousand tonnes in terms of nitrogen in the Fourth Plan and 1250 thousand tonnes of nitrogen in the Fifth Plan. Fixed investment per tonne has been estimated at Rs. 3,000 for new units and Rs. 2000 for subsequent expansion of existing units. Total fixed investment in the public sector is estimated at Rs. 3200 million in the Fourth Plan and Rs. 3500 million in the Fifth Plan. Total fixed invest- 1965-66 to Rs. 4500 million in 1970-71 and Rs. 8000 million in 1975-76.

On the basis of the information compiled from the annual reports of Sindri Fertilizers, working capital is taken at 20 per cent of fixed capital. Return is calculated at 10 per cent of the total investment made 3 years earlier. Interest at 4·5 per cent upto 1965-66 and 5 per cent thereafter has been provided on half of the fixed investment as reduced by the resources financed out of depreciation reserves. Depreciation provision and the depreciation outlay have been calculated on the assumption that the life of a fertilizer plant is 15 years.

Total resources as calculated on the above bases are shown in Table K.6 below:--

Table K. 6: Surplus of Nitrogenous Fertiliser Enterprises.

(Rs. million)

	item	end 1965-66	end 1970-71	end 1975-76
(0)	(1)	(2)	(3)	(4)
1	total outlay	1560	5400	9600
2	fixed investment	1300	4500	8000
3	working capital (@ 20 per cent of fixed investment) .	260	900	1600
4	return on total outlay three years earlier (at 10%) .	100	300	680
5	interest payment	40	120	210
6	profits retained (4—5)	60	180	470
7	corporate taxation @ 50% of retained profits after 5 years of tax holiday	20	30	90
8	net profits(6—7)	40	150	380
9	depreciation provision @ 6·66 per cent on fixed investment 2 years earlier	70	210	420
10	depreciation outlay	..	20	140
11	depreciation resources (9—10)	70	190	280
12	total resources available (8+11)	110	340	660
13	total investment 3 years earlier	1000	3000	6800
14	fixed investment 2 years earlier	1000	3200	6300

It may be noted that the estimated surplus of Rs. 110 million from fertilizers in 1965-66 given in Table K.6 above is nearly equal to the surplus for which credit was taken in the Third Plan estimate.

Machine Building

Total fixed investment in Machine Building industries in the public sector is estimated to increase from Rs. 3800 million in 1965-66 to Rs. 11,000 million in 1970-71 and Rs. 20,000 million in 1975-76. Working capital is taken at 75 per cent of the fixed investment. This percentage is based on the information obtained from the Annual Reports of some of the Machine Building projects both in the public and private sectors. Interest has been calculated in the same manner as for steel and fertilizer plants. Depreciation provision and the depreciation outlay have been based on the assumption that the average life of the plants is about 30 years. Table K.7 gives the total resources of Machine Building plants calculated at 10 per cent return on the total investment made three years earlier:

Table K. 7: Surplus of Machine Building Industries.

(Rs. million)

	items	end 1965-66	end 1970-71	end 1975-76
(0)	(8)	(2)	(3)	(4)
1	total outlay	6650	19250	35000
2	fixed investment	3800	11000	20000
3	working capital (@ 75% of fixed investment)	2850	8250	15000
4	return on total outlay three years earlier	310	1030	2430
5	interest payment	210	460	830
6	profits retained (4—5)	100	570	1600
7	corporate taxation @ 50% of retained profits after 5 years of tax holiday	20	50	290
8	net profits (6—7)	80	520	1310
9	depreciation provision @ 3·33 % on fixed investment 2 years earlier	80	250	520
10	depreciation outlay	..	..	..
11	depreciation resources (9-10)	80	250	520
12	total resources available (8+11)	160	770	1830
13	total investment 3 years earlier	3100	10350	24350
14	fixed investment 2 years earlier	2450	7450	15650

Thus the total return is expected at Rs. 160 million in 1965-66, Rs. 770 million in 1970-71 and Rs. 1830 million in 1975-76. In the estimates prepared for the Third Five Year Plan, credit was taken only for a normal amount of Rs. 20—30 million from this source in 1965-66.

Oil

The investment under this head includes investment in crude oil production and exploration, refining and distribution of oil. The throughout capacity of Indian refineries is expected to increase from about 17 million tonnes at the end of 1965-66 to 30 million tonnes in 1970-71 and 45 million tonnes in 1975-76. It is assumed that the entire additional refining capacity of 13 million tonnes in the Fourth and 15 million tonnes in the Fifth Plan, will be in the public sector. It is, however, expected that the foreign oil companies will have a share of about 25 per cent in the total investment. It has been further assumed that the distribution of petroleum products produced by public sector refineries will be done by the public sector itself and that the crude oil production and exploration will be entirely in the hands of the Government.

For refining a tonne of oil, fixed investment is estimated at Rs. 70 in new units and Rs. 20 in existing units. Investment cost in oil distribution is estimated at Rs. 80 per tonne. The investment in crude oil production and exploration is estimated at Rs. 2750 million in the Fourth Plan and Rs. 3000 million in the Fifth Plan. It is also assumed that the entire investment of Rs. 350 million in 1970-71 and another Rs. 400 million in the Fifth Plan on the production of lubricating oils will be in the public sector.

On the basis of the above estimates, total fixed investment in the oil is expected to increase from Rs. 3000 million in 1965-66 to Rs. 6450 million in 1970-71 and Rs. 10,400 million in 1975-76. According to the balance sheets of the Burmah Shell, working capital is 25 per cent of fixed investment in oil refining and distribution. In this paper we have assumed working capital to be 20 per cent of the fixed investment in the case of petroleum refining and lubricating oil. No working capital is assumed for exploration, whereas whole of the expenditure on distribution would be working capital. Interest has been calculated on half of the capital as reduced by the resources financed out of depreciation reserves at the rate of 4·5 per cent for 1965-66 and 5 per cent thereafter. Depreciation outlay and depreciation provision have been calculated on the assumption that average life of the fixed assets is 15 years.

Table K. 8 *below sums up the position:*

Table K. 8: *Surplus from oil enterprises*

(Rs. million)

	Items	end 1965-66	end 1970-71	end 1975-76
(1)	(2)	(3)	(4)	(5)
1	total outlay	3100	7450	12450
2	fixed investment	3000	6450	10400
3	working capital (@ 20% of fixed investment on petroleum plus whole of the investment on distribution)	100	1000	2050
4	return on total outlay three years earlier	170	440	910
5	intrest payment	60	160	260
6	profits retained (4—5)	110	280	650
7	corporate taxation @ 50% on retained profits assuming 5 years of tax holiday	10	50	140
8	net profits (6—7)	100	230	510
9	depreciation provision @ 6·66 % of fixed investment two years earlier	130	310	570
10	depreciation outlay	..	..	200
11	depreciation resources (9-10)	130	310	370
12	total resources available (8+11)	230	540	880
13	total outlay three years earlier	1700	4400	9100
14	fixed investment two years earlier	2000	4700	8600

The retained profits of oil calculated at 10 per cent return on capital employed three years earlier are thus expected to be Rs. 230 million, Rs. 540 million and Rs. 880 million for 1965-66, 1970-71 and 1975-76 respectively. In the papers presented to the Savings Committee of the NDC, the estimate for 1965-65 was put at Rs. 240 million.

Mining

The target of capacity output for coal has been put at 140 million tonnes in 1970-71 and 220 million tonnes in 1975-76 as against 89 million tonnes in 1965-66. This has been arrived at by estimating the demand on the basis of the end use approach and taking into account export possibilities. The capacity target of iron ore has been set at 61 million tonnes for 1970-71 and 95 million tonnes for 1975-76. It is assumed that nearly three-fourth of the expansion in coal and about two-thirds in iron ore will be in the public sector. In terms of investment, however, since expansion of existing mines costs considerably less than new mines, the share of the private sector in the total investment will be only 15 per cent in the case of coal and 25 per cent in the case of iron ore. About three-fourths of the investment in washeries and 10 per cent in "other" mining is assumed to be in the public sector.

Adopting appropriate norms of investment per unit of output in each mining sector, total fixed investment under mining in the public sector is expected to increase from Rs. 3900 million in 1965-66 to Rs. 7900 million in 1970-71 and Rs. 14,100 million in 1975-76. Working capital has been assumed to be 10 per cent of the fixed investment. Interest has been calculated on half of the capital as reduced by the resources financed out of depreciation reserves as in oil. Depreciation provision and depreciation outlay have been based on the assumption that the average life of fixed capital is 20 years, Table K.9 below sums up the position.

Table K. 9: Surplus from Mining Enterprises.

(Rs. million)

Sl. No.	items	end 1965-66	end 1970-71	end 1975-76
(1)	(2)	(3)	(4)	(5)
1	total outlay	4300	8700	15500
2	fixed investment	3900	7900	14100
3	working capital (@ 10% of fixed investment)	400	800	1400
4	return on toal outlays 3 years earlier	240	570	1100
5	interest payment	90	190	330
6	profits rtained (4-5)	150	380	770
7	corporate taxation @ 50% on retained profits assuming 5 years of tax holiday	20	80	190
8	net profits (6-7)	130	300	580
9	depreciation provision @ 5% on fixed investment two years earlier	140	300	560
10	depreciation outlay	..	..	..
11	depreciation resources (9-10)	140	300	560
12	total resources available (8+11)	270	600	1140
13	total investment 3 years earlier	2400	5700	10950
14	fixed investment 2 years earlier	2800	6000	11100

The retained profits of Mining enterprises calculated at 10 per cent return on capital employed three years earlier are, thus, expected to be Rs. 270 million, Rs. 600 million and Rs. 1140 million for 1965-66, 1970-71 and 1975-76 respectively. In the estimates prepared at the time of formulation of the Third Plan, the estimate for 1965-66 was taken at Rs. 110 million as surplus of coal mining only.

Other Industries

This group includes investment on all industries which have not been dealt with separately above. Investment under these industries is expected to increase from Rs. 3000 million in 1965-66 to Rs. 8700 million in 1970-71 and Rs. 16,000 million in 1975-76. On the basis of a study of the balance sheets of various undertakings similar to the ones included in this group, working capital has been taken at 30 per cent of the fixed investment. As in the case of other industries interest has been calculated on half of the capital as reduced by the resources financed out of depreciation reserves. Depreciation provision and depreciation outlay have been estimated on the assumption that the average life of fixed capital is 20 years. Table K.10 below sums up the position.

Table K. 10: Other industrial enterprises.

(Rs. million)

Sl. No.	items	end 1965-66	end 1970-71	end 1975-76
(0)	(1)	(2)	(3)	(4)
1	total outlay	3900	11300	20800
2	fixed investment	3000	8700	16000
3	working capital (@ 30% of fixed capital)	900	2600	4800
4	return on total outlay 3 years earlier	230	590	1440
5	interest payment	80	260	460
6	profits retained (4-5)	150	330	980
7	corporate taxation (@ 50% on retained profits assuming 5 years of tax hoilday)	40	70	170
8	net profits (6-7)	110	260	810
9	depreciation provision @ 5% on fixed investment 2 years earlier	110	280	620
10	depreciation outlay	..	10	20
11	depreciation resources (9-10)	110	270	600
12	total resources available (8+11)	220	530	1410
13	total investment 3 years earlier	2300	5900	14400
14	fixed investment 2 years earlier	2200	5650	12450

The retained profits under this head calculated at 10 per cent return on capital employed three years earlier are, thus expected to be Rs. 220 million, Rs. 530 million and Rs. 1410 million for 1965-66, 1970-71 and 1975-76 respectively. The estimates prepared for the Savings Committee of the NDC took credit for a surplus of Rs. 120 million from these industries in 1965-66.

Summary

Calculated on the basis mentioned above, the retained profits of enterprises work out to Rs. 7500 million in 1970-71 and Rs. 16300 million in 1975-76. Table 8 gives the estimate of total investment on the public sector enterprises, their return, interest payments and taxes, depreciation outlay and depreciation provision and total resources available for nvestment in 1970-71 and 1975-76. For purposes of comparison similar igures are also given for 1965-66 so as to highlight the difference it would make in resources if the return was 6 per cent from Railways and P & T n 1965-66 and 10 per cent for all other enterprises. This table shows hat as against the resources of Rs. 2200 million anticipated in the Third Plan, the earning from public enterprises would on the above basis amount to Rs. 3500 million in 1965-66.

Table K. 11: Surpluses of Public Undertakings Available for investment: 1965-66, 1970-71 *and* 1975-76.

(Rs. million)

o.	Items	end 1965-66	end 1970-71	end 1975-76
)	(1)	(2)	(3)	(4)
1	total investment	84510	171950	284150
2	fixed capital	71200	139850	223500
3	working capital	13310	32100	60650
4	return on total investment	5080	10590	20810
5	interest payments	2670	5420	8450
6	gross profits(4-5)	2410	5170	12360
7	taxation	260	750	1700
8	net profits(6-7)	2150	4420	10660
	depreciation provison	2460	4760	8380
	depreciation outlay	1080	1660	2730
	depreciation resources (2—10)	1380	3100	5650
	total resources available(8+11)	3530	7520	16310

NOTE: (*i*) For Railways and Posts and Telegraphs, the capital at charge has been shown under fixed capital and the diffrence between capital employed and capital at charge has been shown under working capital.

(*ii*) In case of Power all the investment is put under fixed capital.

APPENDIX L: ABSORPTION OF PRIVATE SAVING BY THE PUBLIC SECTOR INDIA: 1960-61 TO 1975-76.

Apart from the savings out of current revenue and surpluses o public enterprises already discussed in Appendices J and K, the thir source of finance for the public sector is the absorption of private saving through various devices. These include (1) market borrowings, (2) smal savings, (3) provident funds of government employees and (4) othe miscellaneous sources such as repayment of loans and deposits of privat agencies with the government. Borrowing from Reserve Bank (defici financing) is also a source through which the government absorbs saving of the private sector. Taken together the absorption of private saving by the Government would provide to the Government Rs. 7180 millio in 1965-66, Rs. 11900 million in 1970-71 and Rs. 17550 million in 1975-76 At present, apart from external assistance, the public sector plan is al most wholly financed by these sources. However, with increasing reli ance on tax revenues and surplus of enterprises, relative importance o this source of absorbing private savings for public investment will ten to decline progressively.

Market Borrowings.

Market borrowings are defined as the net absorption of Central an State Government Securities by the institutional investors, commercia banks, companies, trusts and individuals who constitute the market. Th securities bought by the Reserve Bank are, however, treated as defici financing. For the Third Plan, the estimate of market borrowings ha been put at Rs. 8000 million. The estimated contributions of differen agencies in 1961-62, 1965-66 and the Third Plan period worked out in a earlier study are as follows:

(Rs. million)

	1961-62	1965-66	1961-6
Life Insurance	480	860	330
Statutory provident funds	350	540	220
Commercial banks	200	300	125
Miscellaneous	100	100	50
Prize bonds	150	150	75
TOTAL	1280	1950	800

For 1970-71 and 1975-76 estimate of market borrowing has been deriv by estimating the extent to which the institutions and agencies w absorb government securities.

Life Insurance Corporation:—Since its inception in 1956 LIC has invest- over 70 per cent of its investable funds in the public sector. Of these, bscription to loans of the Central and the State Governments, Port usts and Electricity Boards etc. have accounted for nearly 62 per cent its investments. The balance of 10 per cent have been invested in using loans. In projecting the contribution of LIC to market borrow- gs it has been asumed that 70 per cent of the investable funds of LIC 1970-71 and 65 per cent in 1975-76 would be provided to the public ctor for financing its investments. However the whole of this amount uld not be available to the public sector through sale of securities. nce, however, credit has not been taken for housing loans to State vernments etc. under any other head, for purposes of the estimates e entire credit for loans from the LIC is taken under "market borrow- gs".

Table L.1 gives the estimate of the new business, the increase in life nds and the amount which the LIC is expected to invest in Govern- ent securities in 1970-71 and 1975-76. Comparable figures are given r 1960-61 and 1965-66 also.

Table L.1 Investment of LIC funds in Government Securities India: 1960-61, 1965-66, 1970-71 *and* 1975-76.

(Rs. million)

	new business	total business	premium	interest receipts	working expenses	maturities death and lapses	Life fund (4+5) —(6+7)	investment in govt. securities
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
0 . . .	4980	22850	970	240	260	310	640	460
5-66 . . .	10780	50580	2050	410	590	580	1290	900
0-71 . . .	17360	97140	3980	810	1150	1030	2610	1830
5-76 . . .	26700	170740	7000	1560	2030	1730	4800	3120

In addition to the above assumption regarding the distribution of vestable funds between government securities and other investments, o important assumptions underlie the estimate given in the above ble. One, it has been assumed that the new business will increase at e rate of 10 per cent per year during the Fourth Plan and 9 per cent r year during the Fifth Plan. Judged against the fact that e LIC's plan was to increase its new life business to Rs. 10000 llion in 1963, the amount of Rs. 10780 million as new business r 1965-66 cannot be considered optimistic. For subsequent year e new business has been related to income. The experience of her countries shows that the life business increased from 1·2 to 2 times the increase in income of the relevant countries. For India, the mini- um increase is assumed. It is estimated that as against a 7 per cent rease in income, the new business will grow by only 10 per cent in e Fourth Plan and 9 per cent in the Fifth Plan. For the Fourth Plan somewhat higher growth is assumed because the insurance habit is t yet widespread, and there is a greater scope for tapping this poten- l in the Fourth Plan. Even with the proposed growth, the total busi- ss in force would be only 51 per cent of the national income in 1975-76, as against 157 per cent in Canada in 1958 and 118 per cent in USA i 1956. The second assumption is that as in 1960-61 the increase in tota business will b 65 per cent of the new business.[1] Actually since th new business is anticipated to grow continuously at 9-10 per cent an the maturities which relate to past policies would not increase proportionately, the total business would grow at a rate faster than assume in the above table. This implies that given the increase in new business, life fund—and therefore, LIC's contribution to Governmen securities—would be much higher than assumed above.

It would thus appear that the estimated increase in life fund o Rs. 2610 million in 1970-71 and Rs. 4800 million in 1975-76 would probabl be an underestimate. Therefore, the contribution of LIC to Governmen securities, housing loans, etc. estimated at Rs. 1830 million and Rs. 312 million for 1970-71 and 1975-76 respectively could actually bear an upward revision.

Statutory Provident Funds:—Statutory provident funds represent th aggregate of the contribution made by the employers and the emlpoyees net of the refunds and advances into the provident funds. The mai provident funds included in this category are:

1. Employees Provident Fund.
    - (a) exempted establishments.
    - (b) non-exempted establishments.
2. Coal Mines Provident Funds.
3. Assam Tea Plantation Fund.
4. Other Miscellaneous Provident Funds.

In the Third Plan estimates, the total contribution of these providen funds to the market borrowings was estimated to increase from Rs. 35 million in 1961-62 to Rs. 540 million in 1965-66, an increase of nearly 11· per cent a year. This rate of increase is due to three factors: (1) th increase in labour force (2) extension of coverage to large number o industries and (3) increase in the contribution rate of provident fund from 6¼ per cent to 8 per cent for all industries. In projecting the resources of the provident funds in 1970-71 and 1975-76 the third facto has to be excluded. The other two factors, however, would continue t operate. The percentage increase in employees in industries as well i other organisations and institutions is, in fact, expected to be higher i the Fourth and the Fifth Plans than in the Third Plan.

Taking all factors, such as the increase in industrial productio labour productivity and extension of coverage to increasingly larger industries, detailed estimates have been made of the increase in the provident fund collections under each of the above mentioned heads. According to these estimates the investable funds and the contribution to Government loans in each of the years 1960-61, 1965-66, 1970-71 and 1975-7 will be as follows:

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[1] This represents an average for the period.

Contribution of various provident funds to government loans: *India*: 1960-61, 1965-66, 1970-71 *and* 1975-76.

(Rs. million)

	1960-61	1965-66	1970-71	1975-76
Total invstement	540	1170	1950	3240
employees provident fund	340	790	1340	2260
coal mines provident fund	40	90	160	260
Assam tea Plantation fund	30	40	50	70
other miscellaneous provident funds*	130	250@	400@	650
investment in Government Securities	440	960	1610	2680
employees provident funds (80 per cent)	270	630	1070	1810
coal mines provident fund (80 per cent)	30	70	130	210
Assam tea plantation fund (20 per cent)	10	10	10	10
other miscellaneous provident funds	130	250@	400@	650

*Figures shown against 'other miscellaneous provident funds' represent net investment in overnment Securities only.

@Based on the estimate of the Reserve Bank of India.

Thus on the basis of the above estimates the investable funds will ncrease from Rs. 540 million in 1960-61 to Rs. 1170 million in 1965-66, s. 1950 million in 1970-71 and Rs. 3240 million in 1975-76. Of this, the mount invested in Government of India and State Government securiies is estimated at Rs. 440 million in 1960-61, Rs. 960 million in 1965-66, s. 1610 million in 1970-71 and Rs. 2680 million in 1975-76. In estimating e investment in Government securities, it has been assumed that, as t present, 80 per cent of the investable funds of the Employees and oal Mines Provident Funds and 20 per cent of the Assam Tea Plantaon Fund will continue to be invested in Government securities. The alance is invested in National Plan and other postal certificates, etc.

Commercial Banks:—The Contribution of commercial banks to Govrnment securities is difficult to estimate. This would depend upon the rowth of bank deposits and the proportion that is advanced to the rivate sector. While it is possible to estimate the growth of the bank eposits with a certain degree of reliability, the same cannot be said bout the private sector investment, unless certain definite plan is made f that sector and measures are taken to ensure that the outlay is kept ithin that ceiling. Pending an examination of the investment requireents of the private sector and the estimate of their likely need for xternal finance, a very tentative estimate of contribution by commercial anks to market borrowings is made through an alternative method.

Until 1962-63 there was a statutory provision that 20 per cent of the eposits of the commercial banks must be kept in the form of (a) till oney (b) balance with the Reserve Bank and (c) Government Securiies. This percentage has been raised to 28 per cent, which will be perative from November 1964. At present (a) and (b) together amount to about 8 per cent of total bank liabilities while investment in Government Securities is 26 per cent (if PL 480 funds are excluded both from deposits and investments.). The proportion of Government Securities t bank deposits has shown a continuous decline from 1950-51 when it wa nearly 36 per cent to 1960-61 when it amounted to 22·2 per cent. Sinc 1960-61 this trend has reversed. Of the total increase of Rs. 3450 million Rs. 1600 million or 46 per cent were invested in Government securitie It is difficult to anticipate the trend in the future. For 1970-71 an 1975-76, the following estimates have been made on the assumption tha 25 per cent of the increase in deposits will be invested in Governmen Securities. This percentage has been derived on the basis that statutor limit of cash and liquidity requirements has been raised to 28 per cen and that till money and reserves with Reserve Bank would be abou 8 per cent of bank deposits.

Table L2: *Estimate of Investment by Commercial Banks in Government Securities, India* 1960-61, 1962-63, 1965-66, 1970-71 1975-76.

(Rs. million)

	1960-61	1962-63	1965-66	1970-71	1975-7
1 national income	141400	148500	180000	260000	37300
2 money supply	28750	33160	38000	55100	8020
3 bank deposits	16650	20100	26500	39650	6015
4 investment in govt. securities .	3700[1]	5300	6900	10200	1535
5 2 as percentage of 1 . . .	20·3	22·3	21·1	21·2	21·
6 3 as percentage of 2 . . .	57·9	60·6	69·7	72·0	75·
7 4 as percentage of 3 . . .	22·2	26·4	26·0	25·7	25·

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[1] excluding PL 480 Funds from deposits and investments

The estimates of money supply for 1965-66 have been worked out b projecting the past trend. The small increase in 1970-71 and 1975-7 in the ratio of money supply to national income over 1965-66, has bee made after taking into account the monetization of the economy. Ban deposits as per cent of money supply have increased from 49 per cent i 1950-51 to 58 per cent in 1960-61 and 61 per cent in 1962-63. This pe centage is expected to increase to 69 per cent 1965-66. In the light this trend we might assume a substantial increase after 1965-66. B in our estimates Bank deposits as proportion of money supply have bee taken only at 72 per cent in 1970-71 and 75 per cent in 1975-76. If per cent of the increase in deposits are invested by commercial banks government securities, their investment in Government securities wou come to about Rs. 10200 million in 1970-71 and Rs. 15350 million in 197 '76. This gives roughly an investment of Rs. 750 million in 1970-71 a Rs. 1200 million 1975-76.

Other Sources:—It is not possible to make any reliable estimate the absorption of government securities by other sources and of sale prize bonds in 1970-71 and 1975-76. It has been assumed that they wou together remain at Rs. 250 million a year as provided in the Third Pl estimate.

Adding together the estimated contribution to market borrowings by different institutions and agencies, total market borrowings are estimated at Rs. 4440 millio nin 1970-71 and Rs. 7250 million in 1975-76 as indicated below:

(Rs. million)

(1)	1965-66 (2)	1970-71 (3)	1975-76 (4)
life insurance	900	1830	3120
statutory provident funds	960	1610	2680
commercial banks	600	750	1200
others	250	250	250
prize bonds			
total	2710	4440	7250

Small Savings.—Net collections under small savings have increased from Rs. 300 million in 1950-51 to Rs. 660 million in 1955-56 and Rs. 1050 million in 1960-61. The increase in small savings has taken place mainly due to the intensification of small savings drive, greater association of State Governments and local bodies with this movement, and introduction of various attractive schemes.

At the time of the formulation of the Third Plan, a number of measures were proposed for giving a further fillip to this movement. In particular, it was suggested that postal authorities should have greater degree of initiative and that suitable prizes and awards may be instituted in order to inculcate in the postal employees, a greater degree of inititative and drive for collecting small savings. It was anticipated that as a combined result of the increase in income of the masses and of the steps that may be taken to encourage small savings movement, small savings collections would steadily increase from Rs. 1050 million in 1960-61 to Rs. 1350 million in 1965-66, giving a total of Rs. 6000 million in the Third Plan.

In actual practice, the collections in the first two years of the Third Plan were much below expectations. In 1961-62 the small savings collections amounted to Rs. 860 million which declined further to Rs. 750 million in 1962-63. The performance in 1963-64 has however been very encouraging. The net collections of small savings in the 9 months—April 1963 to December 1963—was Rs. 700 million as against Rs. 310 million in the corresponding period last year. The total collection in the full year may be reasonably expected to amount to Rs. 1300-1400 million. This high level of collections in 1963-64 appears to be due to depressed state of private industry. If however, the buoyancy in small savings is maintained, it may be possible to reach the target of Rs. 6000 million set fot the Third Plan period.

Despite the recent buoyancy it appears obvious that in the future the small savings collections would play a smaller part in financing the public sector plan. There is, of course, some scope for extending this movement further in rural areas which at present account for only a small percentage of the total. However in this sphere the rural co-operative societies are likely to increasingly compete with the post offices for rural savings. It is, therefore, difficult to anticipate the trend in the growth of small savings in the future. For purposes of our estimates, small savings collections have been taken at Rs. 1800 million in 1970-71 and Rs. 2200 million in 1975-76. This implies a small savings collection of Rs. 8500 million in the Fourth Plan and Rs. 10000 million in the Fifth Plan. Even raising these collections would require vigorous efforts on the part of all agencies associated with the small savings movement.

State Provident Funds.—These provident funds represent the net accretion to the provident funds of Central and State Government employees. In the past net provident fund collections have increased from Rs. 110 million in 1950-51 to Rs. 240 million in 1955-56 and Rs. 530 million in 1960-61. As a result of the recommendations of Finance Commission under which the Provident Fund contribution at 6 per cent per annum has been made compulsory for Central Government employees, there was a sharp increase in the Second Plan. The figure of Rs. 530 million for 1960-61 includes a special element of about Rs. 70 million which would not repeat itself in future. Net of this element the receipts in 1960-61 were Rs. 460 million. These provident funds have shown a steady increase over the Third Plan period. The budget estimate of provident fund collections for 1964-65 is placed at Rs. 720 million. In 1965-66, the net collections under this head would be over Rs. 750 million.

The future increase in provident funds revenue would depend upon the increase in salaries, number of persons employed and the percentage of people employed that may be covered by the scheme. The last applies only to the States where all employees are not compulsorily required to make provident fund contributions. In the absence of any precise knowledge about these factors, the calculations for 1970-71 and 1975-76, have been made on the assumptions that the net receipts under provident funds would grow in proportion to the growth in revenue expenditure over the 1965-66 level. This yields Rs. 1050 million for 1970-71 and Rs. 1450 million for 1975-76 as the contribution of State Provident Funds.

National Defence Fund and Emergency Risk Insurance.—Contribution to national defence fund and payments in connection with emergency risk insurance are the two additional sources of revenue that have become available to the Government since the Chinese aggression on India's borders. The revenue from these sources was Rs. 500 million in 1962-63. However, these sources are of temporary nature and it is anticipated that revenue from these sources will stop or become of insignificant order. Already the income from this source is anticipated to decline to Rs. 100 million in 1963-64 and Rs. 30 million in 1964-65. No credit has therefore been taken from these sources in the Fourth Plan or the Fifth Plan period.

Annuity Deposits.—In 1964-65 the Government has started a scheme by which all assesses with annual income of over Rs. 15000 are required compulsorily to deposit a per cent of their income with the Government. This source is expected to provide Rs. 670 million in 1964-65. For 1965-66, 1970-71 and 1975-76, an income of Rs. 700 million, Rs. 600 million and Rs. 400 million respectively have been assumed. The decline in revenue from this source in 1970-71 and 1975-76 is explained by the fact that the repayments would continuously be increasing due to the annuated repayment of interest as well as the principal.

Deposits and other Miscellaneous Receipts.—The receipts under this head represent the net result of various items of capital receipts as reduced by certain non-plan capital disbursements. The major item of receipts as well as disbursements under this head is non-plan loans and advances to non-departmental agencies, local bodies and private parties. The receipts which include repayment of plan loans, are expected to grow from Rs. 1200 million in 1961-62 and Rs. 1450 million in 1964-65 to Rs. 1,550 million in 1965-66, Rs. 2.100 million in 1970-71 and Rs. 2,850 million in 1975-76. This has been made on the assumption that plan loans will continue to grow and that the average period of repayment of the loans would be 15 years (except for loans to electricity boards).

Some receipts also accrue under "other deposits and advances" item which represents the net result of inflow and outflow of funds under a large number of items. It is difficult to anticipate how these items would behave in distant future. For 1964-65 net receipts anticipated under this head are Rs. 1470 million. This, however, includes Rs. 660 million as net receipts under other 'suspense accounts,' which in accounts turns out to be nil. Excluding this item net receipts, under deposits and advances are estimated at Rs. 900 million in 1965-66. The receipts under this head have been kept constant at this level for all subsequent years. The other items of receipts are loans and advances to States by the Reserve Bank for subscribing to the share capital of cooperative societies and by the Life Insurance Corporation for housing schemes. Together net receipts are budgeted at Rs. 190 million for 1963-64 as against Rs. 90 million in 1960-61. For the Fourth and the Fifth Plan no credit is taken for these receipts. Correspondingly the expenditure financed from such loans has also been provided for under the appropriate heads. Under market borrowings credit has already been taken for the full amount of the resources which the LIC may provide to the public sector. It is assumed that all loans made available by the LIC will be used for plan investments in the Fourth and the Fifth Plan period.

Under non-plan disbursements, non-plan loans is the single major item. The disbursements under this head were Rs. 780 million in 1961-62 and were budgeted at Rs. 1170 million for 1963-64. It is important that such loans should be restricted to the minimum so that the maximum resources should be earmarked for the Plan. Since, however, several loans like loans to government servants, taccavi loans to agriculturists, loans to foreign governments etc. have been traditionally kept outside the plan, a provision of Rs. 1200 million has been kept for each year of the Fourth Plan as well as for 1975-76. This is the same as for 1963-64 except for the loans financed out of assistance from the Life Insurance Corporation which has been excluded for reasons mentioned above.

TABLE L. 3 : ESTIMATES OF MISCELLANEOUS CAPITAL RECEIPTS AND

(Rs. million)

	Items	1961-62 (accounts)	1963-64 (R. E.)*	1964-65
	(1)	(2)	(3)	(4)
1	loans from R. B. I. and L. I. C. (net)[1]	130	190	190
2	repayment of loans and advances	1190	1380	1450
3	deposits and advances including remittances	440	1131	1470
4	total receipts (1 to 3)	1760	2701	3110
5	non-plan loans	780	1165	1330
6	non-plan development outlay	640	916	793
	(i) irrigation	30	20	20
	(ii) industrial development	120	114	146[3]
	(iii) currency, coinage and mint	60	116	54
	(iv) civil works	280	550	450
	(v) multipurpose river schemes	70	63	70
	(vi) road and water-transport	50	41	41
	(vii) improvement of public health	20	10	10
	(viii) agriculture improvement research	10	2	2
7	non-development outlay	240	470	499
	(i) payment under indus water treaty	80	83	83
	(ii) sterling pensions	(—)40	(—)37	(—)63
	(iii) compensation to displaced persons	70	27	24
	(iv) scheme of government trading	30	318	376
	(v) compensation payment to ex-zemindars	100	79	79
	total disbursements	1660	2551	2622
9	net capital receipts (4—8)	100	150	488

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[1] These are loans for house building outside the Plan and for subscription to share capital

[2] From 1966-67 onward, loans for house building financed from L.I.C. and kept outside

[3] From 1966-67, subscription to the share capital of cooperatives is taken to be zero, as

[4] Excludes security paper mill and payment for I.D.A. which will terminate by 1965-66.

[5] Of this amount Rs. 40 million is capitalisation of interest and the rest represent additional
s anticipated after 1965-66.

[6] It is assumed that the additional stock piling of foodgrain of 1 million tonnes each year

*The figures for 1963-64 are revised estimates for the Centre and the budget estimates

NON-PLAN LOANS AND CAPITAL DISBURSEMENTS

(Rs. million)

1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1975-76
(5)	(6)	(7)	(8)	(9)	(10)	(11)
190	..	..	..	..	..	..
1550	1600	1700	1800	1950	2100	2850
900	900	900	900	900	900	900
2640	2600	2600	2700	2850	3000	3750
1300	1200[2]	1200	1200	1200	1200	1200
660	410	410	410	410	410	410
20	20	20	20	20	20	20
150[3]	50	50	50	50	50	50
54	40[4]	40	40	40	40	40
315	300	300	300	300	300	300
70[5]	..	..	..	..	..	..
41	..	..	..	..	..	..
10	..	..	..	..	..	..
..	..	..	..	..	..	..
550	176	176	176	176	93	93
83	83	83	83	83	..	..
(-)37	(—)37	(—)37	(—)37	(—)37	(—)37	(—)37
24	..	..	..	..	..	..
400[6]	50	50	50	50	50	50
80	80	80	80	80	80	80
2510	1786	1786	1786	1786	1703	1703
180	714	814	914	1064	1297	2047

of cooperative societies.

the plan are not shown, No credit is also taken for loans from the L.I.C. for this purpose.

also the loans from the Reserve Bank through which the subscription is financed.

expenditure on D.V.C. by West Bengal Government outside the Plan. No such expenditure

will take place in 1964-65 and 1965-66 after which no additional stock piling will be necessary.

for the States.

Similarly it has been assumed that non-plan capital outlay under development and non-development heads will not be allowed to increase beyond the 1963-64 level. The only changes made are under the heads industries, currency, coinage and mint, multi-purpose river schemes, other works, compensation to displaced persons and State trading in foodgrains. The outlay under industries has been reduced after the Third Plan by the amount of loans from the Reserve Bank with which States subscribe to the share capital of the cooperatives. The reduced provision under currency, coinage and mint from 1966-67 is due to the fact that the investment expenditure on security paper mill and payment to IDA will terminate by that time. Under multi-purpose schemes and road and water-transport, provision is made for non-plan outlays after 1965-66 because it is anticipated that the entire investment expenditure would in future be treated part of the plan and there will be no such category as the outlay outside the plan ceiling. Also after the completion of the major schemes, no capitalisation of interest would be necessary. Under 'other works' the 1963-64 budget includes a provision of Rs. 30 million for purchasing the Kolar gold mines which is excluded from the future projections.

Under State trading, the major item of expenditure is stock-piling of foodgrains. The other expenditures are in fact offset by profits under trading in fertilizers. In making the projections for the Fourth Plan and 1975-76, it is assumed that no additional stock-piling will be necessary after 1965-66. It is anticipated that as a result of the investment in 1963-64 and a provision of Rs. 300 million a year each, the total stocks of foodgrains will be about 4-5 million tonne by 1965-66. The expenditure on rehabilitation has been steadily declining and it is hoped to terminate by 1965-66.

Taking the receipts and disbursements, net contributions from this source are expected to increase from Rs. 130 million in 1965-66 to Rs. 1,300 million in 1970-71 and Rs. 2,050 million in 1975-76.

Deficit Financing

An estimate has been made of the non-inflationary deficit financing and credit has been taken for this amount in the estimate of resources of the public sector.

The increase in money supply which corresponds to the growth in income and degree of monetization in the economy is treated as non-inflationary. This increase in money supply takes place through increase in Government money and through credit creation of the banking system. For estimating deficit financing, it is the government money which needs to be considered. A part of the Government money may, however, be utilised by way of credit to the cooperative agencies through the Reserve Bank. It is the balance, adjusted for some minor factors, which is available as deficit finance of non-inflationary character to the government.

Following the above approach the non-inflationary deficit financing is estimated at Rs. 2,500 million in 1970-71 and Rs. 3,250 million in 1975-76. The basis of the estimates is given in table L. 4.

TABLE L. 4 : ESTIMATE OF NON-INFLATIONARY DEFICIT FINANCING

(Rs. million)

		1965-66	1970-71	1975-76
	(1)	(2)	(3)	(4)
1	money supply	3000	4500	6270
2	increase in bank money (one fourth of 1)	750	1100	1570
3	government money (1—2)	2250	3400	4700
4	net credit to non-government sector i.e. cooperative banks, etc.	625	800	1280
5	increase in non-monetary liabilities	125	130	170
6	deficit financing (3—4+5)	1500	2470	3250
	(rounded)	(1500)	(2500)	(3250)

The increase in money supply during 1970-71 and 1975-76 given in table L. 4 has been worked out on the assumption that (a) national income during the Fourth and Fifth Plan would increase at 7·5 per cent a year and (b) the degree of monetization in the economy would be about one per cent a year.

APPENDIX M

ESTIMATE OF TOTAL OUTLAY, INVESTMENT AND ITS DISTRIBUTION BETWEEN THE PUBLIC AND THE PRIVATE SECTORS DURING THE FOURTH PLAN

The implications of achieving the physical outputs/targets as outlined in the Perspective of Development set out in the text in terms of investment and current outlays have to be carefully analyzed, so that suitable means could be devised for mobilising resources as required. In this note an attempt has been made to estimate the investment requirements and current outlays of the public sector in the Fourth Plan for achieving the physical targets corresponding to the provisional programme of development referred to earlier. The targets of output activity in the field of agriculture, mining and industry prepared in the Perspective Planning Division for 1970-71 against which the estimates of investment are made are given in Appendix B.

The study is divided into five sections. Section I deals with agriculture and irrigation; section II with industry and mining, power and transport; section III with education, medical and public health and section IV with residential and commercial buildings and inventories. The final section—section V—gives the total picture of current outlays and investment required for achieving the physical programme set for the Fourth Plan.

I

Agriculture

In the field of agriculture it is not possible to establish a direct quantitative relationship between an increase in agriculture output and the total investment required for it. The increase in agricultural production is the combined result of a large number of factors such as irrigation, fertilizers and organic manures, better seeds, improved agricultural practices, land reclamation, plant protection, soil conservation, land tenures, economic incentives to the farmers, weather conditions, etc. The matter is further complicated by the fact that the products of agriculture are varied and the increase in output of many of these products cannot be ascribed separately to investment. As a result, estimates of investment in this sector are somewhat arbitrary.

The physical targets of major agricultural products against which the estimates of investment are made here are given in Appendix B. 1. The outputs given there are considered necessary for meeting the consumption requirements arising out of the postulated increase in income.

Total investment in agriculture, including animal husbandry, dairying and milk supply, forestry and fisheries is estimated at Rs. 20,800 million (Table M. 1). The basis of the estimate under major heads is discussed below:—

Land Reclamation.—The target of reclaiming land has been set at 1 million acres during the period 1960-61 to 1975-76. Of this additional areas to be reclaimed in the Third Plan was fixed at 3·6 million acres. For the Fourth Plan the area to be reclaimed has been assumed at 3·4 million acres. The investment expenditure per acre has been taken at Rs. 200. This is based on the norms given in the papers prepared by the Working Group on Agriculture for the Fourth Plan. At this rate total investment on land reclamation is estimated at Rs. 680 million.

Soil Conservation.—During the Third Plan, soil conservation works are expected to be completed on 12 million acres of agricultural land and 0·74 million acres of catchment area. For the Fourth Plan the target is to extend conservation measures to 20 million additional acres of agricultural land and 2·5 million acres of catchment area. On the basis of the Working Group reports, investment per acre of agricultural land is taken at Rs. 80 and per acre of catchment area Rs. 200. This gives a total investment of Rs. 2,100 million in the Fourth Plan.

Minor Irrigation.—In the Third Plan minor irrigation works with an additional potential of 18·6 million acres are expected to be created. The target of additional potential for the Fourth Plan is 13 million acres. It has been assumed that this additional potential will be divided equally between wells and other minor works (*i.e.* tanks). The average investment per acre of area irrigated by minor works other than wells is estimated at Rs. 225. This represents the average investment cost per acre under all minor works during the Second and the Third Plan. The investment cost per acre of well irrigation is taken at Rs. 500 on the assumption that a well costs on an average Rs. 2,500 and that it would irrigate 5 acres This gives a total investment of Rs. 4,710 million in the Fourth Plan.

Equipment.—With the expanding output in agriculture, the demand for agricultural equipment is expected to grow at a fast rate. The requirement of tractors has been based on the assumption that about 25 per cent of holdings of more than 25 acres would be mechanised by 1975-76. On the basis of data for 8th round of the National Sample Survey, the number of operational holdings with more than 25 acres is estimated at 2·6 million. For the Fourth Plan demand for tractors is placed at 135,000 and for the Fifth Plan about 500,000. Assuming that cost per tractor (which will be mainly small size one) together with the attachment at Rs. 5,500 the total investment in tractors is put at Rs. 740 million.

Besides pumps and diesel engines other equipment required include agricultural implements such as field implements, agricultural hand tools, irrigation equipment, machinery for processing agricultural products, plant protection equipment, and farm transport equipment. For the Fourth Plan a provision of Rs. 1,000 million has been made which is nearly twice the level during the Third Plan.

On the basis of norms suggested by the Working Group papers total investment in cold and ordinary storage is estimated at Rs. 1,600 million.

In addition to the above items a provision of Rs. 5,700 million has been made for various other items of investment which have not been separately treated above. These include investment on consolidation, laying of orchards and plantations, construction of farms and cattle sheds, agricultural research, agricultural extension and area development programmes.

TABLE M. 1: INVESTMENT REQUIREMENT FOR AGRICULTURE DURING THE FORTH PLAN

item	unit	cost per unit (Rs)	physical target	investment (Rs. million)
(1)	(2)	(3)	(4)	(5)
reclamation	mil. acres	200/acre	3·4	680
soil conservation				
agricultural lands	mil. acres	80/acre	20·0	1600
catchment areas	mil. acres	200/acre	2·5	500
minor irrigation				
tanks	mil. acres	225/acre	6·5	1460
wells	mil. acres	500/acre	6·5	3250
equipment				
tractors	thou. nos.	5500/no.	135	740
diesel engines	thou. nos.	2200/no.	400	880
pumps	thou. nos.	270/no.	1000	270
other implements				1000
storage and ware housing				
standard storage	mil. tonnes	100/tonne	6·0	600
cold storage	mil. tonnes	500/tonne	2·0	1000
items not covered				5700
animal husbandry and dairying				1100
forestry				1270
fishery				750
TOTAL				20800

NOTE—The estimates of investment given in the above table are meant to emphasize the nature and content of the programmes of agricultural development. The actual action programmes may have to be formulated in different forms.

The above provision does not include investment expenditure on animal hubsbandry and dairying, forestry and fishery. The Steering Group on Agriculture has made a provision of Rs. 21,000 million for animal husbandry and dairying and of Rs. 1,300 million on forestry. Deducting a provision of Rs. 1,000 million and Rs. 30 million respectively which is estimated as the revenue expenditure under these two heads, the investment under animal husbandry and dairying is estimated at Rs. 1,100 million and under forestry Rs. 1,270 million for the Fourth Plan.

The Steering Group has provided for an outlay of Rs. 800 million for fisheries in the Fourth Plan. On the basis of the distribution in the Third Plan, the investment expenditure on fisheries would be Rs. 550 million. This amount would be inadequate if large scale development of deep sea fishing is to be taken up with use of modern equipment like heavy trawlers, mechanized boats, etc. In the present estimates a total provision of Rs. 1,000 million has been made of which investment is anticipated to be Rs. 750 million.

Total investment in agriculture, and other associated activities on the above basis, works out to Rs. 20,800 million. It is difficult to divide this investment between the public and the private sectors as no firm basis of the private sector investment in agriculture is at present available. Assuming, however, that as in the past the share of the public sector would continue to grow, the investment of the public sector is assumed at Rs. 10,500 million and of the private sector Rs. 10,300 million.

With the investment expenditure in agriculture is associated a substantial amount of current nature which must also be fully provided in the public sector if the agriculture programmes are to be put through. This includes expenditure including subsidy connected with manures and fertilizers, plant protection, implements, land reclamation and improvement, soil conservation, agricultural research and statistics, animal husbandry and dairying, fishery, community development and national extension etc. In the Third Plan, as against an investment of Rs. 6,250 million, current outlay on the Plan was placed at Rs. 4,430 million. For the Fourth Plan, a current outlay of Rs. 6.400 million is provided as per details given below:

TABLE M. 2 : CURRENT OUTLAY ON AGRICULTURE AND ALLIED ACTIVITIES

(Rs. million)

items	current outlay
1. Manures and fertilizers, seeds, implements and plant protection	1750
2. Soil conservation	600
3. Land reclamation, improvement and reforms	850
4. Agricultural research and statistics	450
5. Animal husbandry and dairying	1000
6. Fishery	250
7. Marketing, storage and warehousing	100
8. Community development	500
9. Other agricultural programmes including forestry	900
10. total	6400

Major and Medium Irrigation

The additional potential from major and medium irrigation works created during the Third Plan is now anticipated at 11.1 million acres (Third Plan Mid Term Appraisal, p. 111). The target for the Fourth Plan has been taken at 17 million acres.

Investment cost per acre is estimated at Rs. 550. This is based on the average for the Second and the Third Plans. This excludes investment on channels etc. to be provided to the farmers. The cost of these ancillary improvements is assumed at Rs. 50 per acre. Total investment on major and medium irrigation works on this basis works out to Rs. 10,200 million.

In addition to irrigation, adequate provision is necessary under flood control, drainage, anti-water logging and anti-sea-erosion schemes. These schemes are closely related to irrigation and have to be viewed together as part of the comprehensive programme. For it is not only essential to provide new irrigational facilities but also essential to ensure that existing area under crop does not go out of use due to flood or water logged conditions. The Third Five Year Plan provided for an investment of Rs. 610 million under these heads. If the Third Plan provision between these schemes and the major and medium irrigation schemes is maintained in the Fourth Plan, the investment under flood control and drainage will amount to about Rs. 1,000 million.

The total outlay under irrigation, flood control and drainage thus adds up to Rs. 11,200 million for the Fourth Plan. The entire expenditure is by way of investment and by its nature has to be fully in the public sector.

Total Agriculture and Irrigation

Direct investment in agriculture (including major and medium irrigation) thus works out to approximately Rs. 32,000 million accounting for about 15 per cent of the total net investment. Adding related investments in electric supply for agricultural uses, manufacture of chemical fertilisers, pesticides, farm equipment, roads, transport etc., investment —direct and indirect—in agriculture would be much higher.

Industry and Mining

The estimates of fixed investment in organised industry and mining have been derived from output capacity added during the fourth plan by using incremental capital coefficients per unit of outlay for new units as well as for substantial expansions as given in Table (M). These norms have been compiled in P.P. Division from various sources such as (1) project reports (2) Programmes of Industrial Development (3) Planning Commission Reports of Working Groups (4) licencing data and (5) technical literature. A number of coefficients were available in a P.P. Division study, 'Investment-Output-Employment relationships: phasing of Investment and Time-lags in Organised Manufacturing Industry", prepared in 1960.

Applying these coefficients to the increase in capacity targets in each industry, after making some provision for additional investment required to maintain the tempo of growth in the initial years beyond the Fourth Plan in industries which have characteristically large time lags, the fixed investment in organised industries and mining during the Fourth Plan is estimated at Rs. 64,400 million. This accounts for about 30 per cent of the total net investment. Industrywise estimates of these investments are set out in Table M. 3. In working out these estimates, it has been assumed that investment required to attain all the revised targets o capacity output (as stated in the Mid-Term Appraisal Report) set fo 1965-66 will have been made during the Third Plan. To the extent thi is not realise the investment in industry in the Fourth Plan may nee to be further stepped up for realising the target shown in Table (M (attached) for 1970-71.

In apportioning the investment on industry and mining during th Fourth Plan between the public and the private sectors, it has bee assumed that the Industrial Policy Resolution will continue to be operative without any substantial modification.

On the basis of the considerations stated above, the investment in industry and mining has been roughly apportioned between the public and the private sectors (Table M. 3). Fixed investment in the public sector would amount to Rs. 35,800 million and in the private sector to Rs. 28,600 million during the Fourth Plan. Cooperative sector has been shown as part of the private sector. It would be desirable to show the cooperative sector, such as in sugar, textiles separately.

Village and Small Industries

Within the provision of Rs. 64,400 million for organized manufacturing industry, there is included a provision of Rs. 2,000 million for the development of small factories. In addition there is a separate provision for Rs. 7,000 million for village and small industries. With the better supply of raw material from agriculture and industry and with growing demand for various goods in the economy, there will be increasing opportunity for the development of the decentralized sector of manufacturing industry. The expected increase in net income from this sector is about Rs. 8,000 million, and the provision of Rs. 9,000 million investment corresponds to this output. The provision in the public sector corresponding to the total investment of Rs. 9,000 million is Rs. 3,500 million. In addition current outlay of Rs. 2,000 million is provided by way of grant and subsidies etc.

TABLE M. 3 : NET FIXED INVESTMENT IN ORGANISED INDUSTRY AND MINING AND ITS DISTRIBUTION BETWEEN PUBLIC AND PRIVATE SECTORS DURING THE FORTH PLAN

(Rs. million)

industries (1)	total (2)	public sector (3)	private sector (4)
1 mining	5850	4000	1850
2 oil exploration and refining[1]	3700	3450	250
3 textiles	1800	(*)	1800*
4 cement	1850	200	1650
5 sugar	1650	(*)	1650*
6 metals	19300	15300	4000
7 fertilizers	4350	3600	750
8 other chemicals	9450	2000	7450
9 transport equipment	2700	700	2000
10 electrical equipment	3050	2050	1000
11 machinery others than electrical	8500	4100	4400
12 other items	2200	400	1800
total	64400	35800	28600

(1) excluding pipelines for which investment is shown under "transport and communications."

(*) cooperative sector shown as part of private sector.

Power

For achieving the industrial and mining output in 1970-71 as given in Table B. 2 and B. 3 and for meeting the requirements of other sectors including domestic consumption, total installed capacity of power will have to be stepped up from 12·4 million KW targetted for 1965-66 to 23·6 million KW in 1970-71 (See also Electricity Balance C. 3). For achieving this order of expansion and for providing adequately for advance action in the Fifth Plan investment expenditure in the Fourth Plan is estimated at Rs. 23,000 million. This includes provision for generation, transmission lines and distribution as well as rural electrification.

Out of the total of Rs. 23,000 million, investment allocated to the private sector is Rs. 500 million which will, however, mainly be spent on extension of transmission and distribution lines. The investment in the public sector will be Rs. 22,500 million.

Transport and Communication

On the basis of the estimated increase in output in agriculture, mining and industry during the Fourth Plan, total goods traffic is estimated to increase from 120 billion ton-miles in 1965-66 to 204 billion ton miles in 1970-71. The passenger traffic during the same period is anticipated to grow from 114 billion passenger miles to 162 billion passenger miles. In apportioning the total traffic between railways and other modes of transport, it has been assumed that the railways will continue to carry most of the traffic (about 90%) in bulk commodities like coal and mineral ores and heavy merchandise like iron and steel. In respect of other types of traffic, railways share is expected to fall progressively and most of the traffic upto 300 kilometres will be catered for by motor transport (see Appendix D).

The motor transport is expected to get as much scope for expansion as is possible and consistent with cost and efficiency consideration. In deciding their shares in the volume of traffic carried, account has been taken of the limits set by the feasible expansion in automobile production, in road building and associated organisational problems. The distribution of the traffic carried by different means of transport in 1965-66 and 1970-71 is anticipated to be as follows:

TABLE M. 4 : TRAFFIC CARRIED BY RAILWAYS, ROADS AND OTHER MODES OF TRANSPORT

		1965—66	1970—71
1	total goods traffic (billion net ton miles)	120	204
2	railways	86	140
3	motor transport	25	50
4	other modes	9	14
5	total passenger traffic (billion passenger miles)	114	162
6	railways	60	75
7	moter transport	52	83
8	other modes	2	4

For carrying the traffic allocated to them, net investment in railways is estimated to be about Rs. 15,000 million during the Fourth Plan. Details of the investment in railways are given in Table M. 5. This amount is exclusive of the estimated replacement outlay of Rs. 5,000 to 5,500 million. The total railways programme will thus be of the order of about Rs. 20,000 million. An important assumption underlying the railway estimates is that all additional traffic generated during the Fourth Plan will be carried by electric and diesel traction. During the Fourth Plan period the railway track mileage is taken to increase by about 3,500 miles through doublings, new lines and gauge-conversions. The entire investment of Rs. 15,000 million will be in the public sector.

In order to enable the motor transport to carry the goods and passenger traffic indicated in Table M. 6, a very large order of investment will be necessary. After taking into account the improvement in operational efficiency, it is estimated that the number of goods trucks on road would have to increase from 280,000 in 1965-66 to 550,000 in 1970-71 and the passenger buses from 80,000 to 130,000. Taking the average cost per goods truck as Rs. 30,000 total net investment in trucks is estimated at Rs. 8,100 million. The average cost per bus is taken at Rs. 40,000. For 50,000 additional buses, the net investment works out to Rs. 2,000 million.

TABLE M. 5 : INVESTMENT REQUIREMENT FOR RAILWAYS : INDIA : 1965-66 TO 1970-71

	no. of units required or other basis of calculations		cost per unit (000 Rs.)	investment required (Rs. million)		
	net addition	replacement		net investment	replacement	gross investment
(1)	(2)	(3)	(4)	(5)	(6)	(7)
I. Rolling Stock						
(i) electric locomotives .	600 units		1200	720	. .	720
(ii) diesel locomotives . .	1000 units	150 units	1300	1300	200	1500
(iii) steam locomotives .	. .	700 units	400	. .	280	280
(iv) wagons (in terms of 4 wheelers) . . .	160000 units	55000 units	25	4000	1370	5370
(v) electric multiple units .	700 units	150 units	450	400	70	470
(vi) rail care . . .	200 units					
(vii) passenger carriages .	5000 units					
(viii) other coaching vehicles	1500 units	3000 units	125	810	380	1190
(ix) other miscellaneous items				70	. .	70
total . . .				7300	2300	9600
II. Line capacity works						
(i) electrification (excluding rolling stock)	1500 route-miles		400	600		
(ii) construction of new lines	1000 miles		1200-1300	1250		
(iii) doubling of single lines conversion of M/G/NG to BG . . .	2400-2500 miles		900—1000	2400		
(iv) other line-capacity works, like yard-expansion, loop-lengthening, additional crossing stations, etc. .	On the same scale as in the Third Plan period as related to additional traffic to be carried.			1000		
total . . .				5250	2400	7650

TABLE M. 5 : INVESTMENT REQUIREMENT FOR RAILWAYS : INDIA : 1965-66 TO 1970-71—*contd.*

	no. units required or other basis of calculation		cost per unit (000 Rs.)	investment required (Rs. million)		
	net addition	replacement		net investment	replacement	gross investment
(1)	(2)	(3)	(4)	(5)	(6)	(7)
III. Other items of Development						
(i) workshops, plant and machinery	Investment for these items have been kept at about 15—20% higher than the provision in Third Plan.			800	100	900
(ii) signalling and safety works . . .				400	100	500
(iii) bridge—work . .				150	100	250
(iv) staff quarters and welfare	It is related to additional traffic to be carried during Fourth Plan and is in conformity with the figures indicated by the Railway Board.			600	..	600
(v) users amenities . .				200	..	200
(vi) other structural and electrical works . . .				200	..	200
(vii) investment in road services				100	..	100
total . . .				2450	300	2750
Grand total . .				15000	5000	20000

The outlay of Rs. 10,100 million estimated for road transport represents net investment. Its distribution between the public sector and private sector will depend upon the share of these sectors in total road transport during the Fourth Plan. At present the public transport undertakings compete with the private sector only in the sphere of passenger services, the goods transport being entirely in private hands. The Third Plan has, however, suggested that the public sector should extend its activities in the field of transport of goods by road.

The share of the public sector in passenger services was about 30 per cent in 1960-61. In arriving at the investment of the public sector transport undertakings in the Fourth Plan, it is assumed that their share in passenger services will increase to about 40 per cent by 1970-71. The investment of the public sector in buses will accordingly be Rs. 1,000 million and of the private sector also Rs. 1,000 million.

It is also anticipated that during the Fourth Plan, the public sector transport undertakings will participate in the goods transport. But, as a policy decision in this matter is yet to be taken by Government, no provision for public sector has been made for the present. However, not all private sector trucks are public carriers. A substantial number of trucks is privately owned by various industrial establishments and Project Authorities etc. Though the exact proportion is not known it is assumed that at least about 20 per cent of the additional trucks will be privately owned. Their investment would be already part of investment under industries and mining etc. Therefore, the investment to be shown separately for trucks in the private sector would be about Rs. 6,500 million.

Water Transport.—**In respect of water transport, total investment during the Fourth Plan is estimated at Rs. 3,400 million as per details given below:**

	(*Rs. million*)
Shipping	1,500
Port-development	1,500
Light-houses	200
Inland water transport	200
	3,400

The shipping tonnage in operation will increase to about 17 lakh GRT by 1965-66. About 15 lakh GRT may be added during the fourth plan period. This will enable Indian ships to carry 100 per cent of coastal traffic and about 35 to 40 per cent of our overseas trade as against 10 to 15 per cent at present. The net investment required will be of the order of about Rs. 1,500 million.

Of the total outlay of Rs. 1,500 million, it is estimated that the private sector will provide resources of the order of only Rs. 2,500 million and the balance will have to come from the public sector. This may be compared to the investment of Rs. 550 to 600 million provided in the Third Plan of which the share of the private sector was placed at about Rs. 78 million.

The investment of Rs. 1.500 million on ports and of Rs. 200 million on light-houses is considered essential to permit the expansion in coastal as well as overseas trade anticipated during the Fourth Plan. By its very nature the entire investment will be in the public sector.

The investment proposed for inland water transport is based on the report of the Indian Water Transport Committee, who have recommended expansion of inland water-ways at a total cost of Rs. 600 million. It has been assumed that the task proposed will be completed in a period of 15 years ending 1975-76. The Third Plan has provided an investment of Rs. 90 million under this head. For the Fourth Plan, a provision of Rs. 200 million is suggested. The provision would be, practically entirely, in the public sector.

Roads

For meeting the expanded requirements of motor transport and other community purposes it is essential to develop the road system in the country. Taking into consideration the recommendations made by the Committee of Chief Engineers on Twenty-year Road Development Plan and the envisaged level of road traffic by 1970-71, the investment proposed for the Fourth Plan is Rs. 9,000 million, of which Rs. 4,000 million is for National Highways and Rs. 5,000 million for roads in States sector, including Rs. 2,000 million for village approach roads. This entire investment on roads will be in the public sector.

Communications and air traffic, etc.

The growing urbanisation will require vastly expanded facilities in regard to the communications and air traffic. Detailed estimates in these fields need to be worked out in consultation with the appropriate authorities. For purposes of present estimates, it has been assumed that investment in these activities will be a little more than twice the level envisaged for the Third Plan. On rough calculation, the total investment is taken at Rs. 1,500 million for air transport, Rs. 2,000 million for communications and Rs. 1,100 million for other items (pipelines, tourism, etc.) Since all air and communication services are owned by the public sector, their entire investment will form part of the public sector plan.

Total investment in transport and communications during the Fourth Plan on the basis of the above estimates adds upto Rs. 40,500 million, Rs. 32,750 million in the public sector and Rs. 7,750 million in the private sector. The position is summarized below:

TABLE M. 6: TOTAL INVSTMENT IN TRANSPORT AND COMMUNICATIONS DURING THE FOURTH PLAN

(Rs. million)

	Total	Public	Private
(1)	2	3	4
Railways	15000	15000	..
Motor transport	8500	1000	7500
Water transport	3400	3150	250
Roads	9000	9000	..
Air transport	1500	1500	..
Communications	2000	2000	..
Other transport and tourism	1100	1100	..
TOTAL	40500	32750	7750

Education

Education and training deserve very careful consideration in any long term projection of economic development. As the economy grows, the complexity of tasks to be performed increases correspondingly and even larger number of trained personnel including scientists, engineers, technicians, teachers, doctors, nurses etc. are required. These new demands have to be analysed in the light of the planned pattern of future output and activity. Unless educational development has been well planned in advance, providing for the inevitable time lags in the process of education and training, insuperable obstacles will develop in the way of rapid economic advance because of deficiency of skilled personnel. Seen in this light, the development of education is a vital aspect, a moving force, in economic growth. Expenditure on education and training must correspond to these requirements not only of providing adequate numbers of young men and women to undertake the manifold tasks of a developing society but ensuring that the quality of their education is not neglected.

Widespread extension of educational opportunities has of course also a wider role to play in a democracy. It is indeed one of the most important instrument for bringing about abiding social change, of progressive realization of the ideal of equality of opportunity, of widening the base for discovering and nurturing talent and of giving people an adequate chance to realise their potential, enrich their life and the life of the community in which they live.

The objectives of education may be stated as follows:

(a) Virtually all children of ages 6—14 should be in school by 1975-76. An eight year universal and compulsory education for all boys and girls should form the basis of the entire system of mass education. This is in fact a directive of our Constitution.

(b) Whereas education upto the age of the 14 must be universal and justified in itself as a right and requirement of a citizen, education beyond this stage must be primarily a preparation for life's work. The structuring of education should be in close relationship with a broad manpower plan (associated with a long-term plan of development) which ensures that at completion of every stage of education there should be avenues of fruitful employment. The quality of labour force will have to be continually improved if improvements in productivity are to be realized—in agriculture, in industry, in every sector of national life.

The estimates of outlay on education during the Fourth Plan are based on the above considerations. Table M. 7 sets out the main elements of the programme in an abstract form and also gives an indication of its current and capital cost.

The provision includes not only for quantitative expansion but also for qualitative improvement of education at all levels. Provision of free meals and text books to a substantial portion of children in elementary schools, greatly enlarged provision for scholarships and stipends to enable bright student, irrespective of their financial situation, to avail of educational opportunities are other features of the programme. As a result, current expenditure on education is expected to increase from an estimated amount of Rs. 4,340 million in 1965-66 to Rs. 8,890 million in 1970-71. The 'plan' outlay on education, (*i.e.* current outlay excluding committed expenditure) works out to Rs. 8,700 million for the Fourth Plan period. To this has to be added Rs. 5,500 million on account of capital expenditure, all except Rs. 250 million out of which will have to be in the public sector.

Thus public sector outlay on education during the Fourth Plan will be Rs. 13,950 with Rs. 8,700 million as current outlays and Rs. 5,250 million as investment.

TABLE M. 7 : EDUCATIONAL ENROLMENT AND THE ESTIMATE OF CURRENT

	Level	Enrolment*		
		1961	1966	1971
	1	2	3	4
1	A Elementary Education	41·7	62·9	92·0
2	B Secondary Education 14—17	3·0	5·2	8·2
	C Teacher Trainee			
3	Primary	131	228	964
4	Middle and High	26	50	134
	D Higher Education			
5	General	890	1300	1920
	Technical			
6	Degree	50	98	165
7	Diploma	67	126	218
8	Medical	36	45	85
9	E Total	45·9	69·9	103·7
10	F Scholarships			
	Middle school	..	300	910
11	High School	..	400	880
12	Colleges	..	260	570
13	Total	..	960	2360
14	G Grand total	..	..	..

*Units : A, B and E in million : C, D and F in thousands.

Note 1. Enrolment figures except for technical and medical courses are from the Report mated from intake figures given in the Third Plan.

2. Norms have been derived from scattered sources.
3. Secondary education does not include vocational education.
4. Cost of training medical personnel has also been shown under Public health. To this

AND INVESTMENT OUTLAY ON EDUCATION DURING THE FOURTH PLAN

Capital Cost		Current Cost					
per pupil IV (Rs.)	Plan (Rs. million)	Per pupil (Rs. per annum)			total cost (Rs. million)		
		1961	1966	1971	1961	1966	1971
5	6	7	8	9	10	11	12
50	1400	33	38	51	1364	2396	4729
555	1664	91	101	142	273	526	1162
400	294	297	347	389	39	79	375
900	76	581	648	727	15	32	97
1200	744	409	441	479	364	573	920
5000	335	1020	1099	1192	51	108	197
3500	322	362	392	427	24	49	93
16000	640	1627	1759	1913	59	79	163
..	5475	..	..	..	2189	3842	7736
..	..	..	240	240	..	72	218
..	..	..	360	360	..	144	317
..	..	..	1080	1080	..	281	616
..	..	..	..	..	193	497	1151
..	5475	..	..	..	2382	4339	8887

of the Working Group on General Education and for the excepted categories they have been esti-

extent there is a double counting.

With a total annual expenditure of Rs. 10,300 million on education in 1970-71, public expenditure on education will rise to nearly 4 per cent of national income.

Scientific Research

The level of current expenditure on scientific research is estimated at about Rs. 450 million by the end of the Third Plan and capital expenditure at about Rs. 150 million. An increase of 15 per cent per year in current expenditure and a provision for capital outlay expanding at the rate of 20 per cent per year would mean a Fourth Plan provision of about Rs. 2,500 million divided almost equally between current and capital outlay. If the distribution of this amount is done with care, so that altogether disproportionate allocations are not made to any one branch of science or any particular department, it should prove to be ample for fullest possible development of science. The limit to fruitful expansion here is trained personnel rather than other resources.

There should be adequate provision for foreign exchange of the order of Rs. 40—50 million per year for essential imports of specialized equipment and supplies.

The vital role of scientific research in the transformation of a backward economy to an efficient, productive and progressive one lends special emphasis to the need of planning for science in close relation to the needs of the economy both in the short run and the long run. It is assumed this will be done.

Medical public health

Expenditure under medical and public health during the Fourth Plan has been worked out on the assumption that the plans will broadly follow the pattern of medical and public health facilities suggested by the Health Survey and Planning Committee as modified by the recommendations of various Working Groups set up by the Ministry of Health since then. The Health Survey and Planning Committee made recommendations regarding development of medical and public health facilities over the next 15—20 years; the recommendation of various Working Groups are more detailed but only in respect of the Fourth Five Year Plan. The relevant features of these recommendations were brought together in a consistent frame work of a phased programme upto 1975-76 in a study of the PP Division. The results are set but in Table N.

Hospital beds—The Health Survey and Planning Committee recommended that by 1975-76 there should be at least one bed for every thousand population as compared to only 0·49 anticipated by the end of Third Plan. This means that 385,000 new beds are to be added to the existing 240,000 beds during the Fourth and Fifth Plan periods to reach the required proportion. Taking into account the availability of doctors and other medical personnel and financial resources, the total number of beds to be provided during the Fourth Plan has been estimated at 155,000. The sub-group on primary health centres for the Fourth Plan after taking into consideration the Mudaliar Committee's recommendation and the family planning organisations recommendations, has suggested raising the bed strength and sub-centres of the primary health centres from 6 to 10 and from 3 to 6 respectively. It is also proposed that the maternity and child health care and laboratory services may be integrated at the primary health centres in rural areas.

Dental Service.—By the end of the Third Plan the total number of dental clinics in position will be hardly 100. The ultimate aim for providing dental services is as follows:

District hospital	1 team each
Tehsil hospital	1 team each
Clinic for school children	1 : 30000 children.

Dispensaries.—No accurate information about the total number of dispensaries is available in India at the end of the Third Plan. But it is believed that there may be about 1,500 urban and 500 rural dispensaries About 70 of them, covering a population of 7 lakhs, are under C.G.H. Scheme. It is proposed to extend the scheme to other cities in India during the Fourth Plan and to cover the whole urban population by 1975-76. The sub-group on hospital care also recommended that 500 polyclinics be established during the Fourth Plan which should be attached to all the district and other big hospitals at tehsils. The complete programme of hospital and hospital beds, dispensaries, dental care and their financial implications have been summarised in the Table M. 8 below:

Education and Training.—In order to meet the requirement of increased medical care and public health facilities, a large number of doctors, and other para-medical personnel will have to be trained. It is now impossible, in view of the time lags involved in medical education, to reach the level of one doctor to 3,000 persons as suggested by the Health Survey and Planning Committee by 1976. The investment and current expenditure under this head have been made on the assumption of requirement of doctors corresponding to the scheme of health as set out in Table N. This will mean one doctor per 4000 population in 1976. In the case of other para-medical personnel, the underlying assumption is that the expansion of training facilities would meet the recommended level. Table M. 9 gives the required number of seats in training institutions at the end years of the Third and Fourth Plans which are to be provided and the estimates of capital and recurring cost per seat. The norms of capital and recurring cost per seat used in this estimate have been taken from the paper prepared by the sub-group on Professional Education for the Fourth Five Year Plan. The total investment expenditure under education and training works out at Rs. 1,180 million during the Fourth Plan.

TABLE M. 8 : ESTIMATED CAPITAL AND RECURRING EXPENDITURE ON MEDICAL CARE DURING THIRD AND FOURTH PLANS

			cost per unit (Rs.)	
	1965-66	1970-71	capital	recurring
1	2	3	4	5
1 Hospital service				
1 general beds (thousands)	134	243	20000	3000
2 special beds (thousands)	75	100	5000	2000
3 beds at primary health centres (thousands)	31	52	125,000[1]	80000[1]
4 total beds (thousands)	240	395		
5 number of primary health centres (000)	5·2	5·2		
2 Dispensaries				
1 polyclinics	..	500	260000	53000
2 C.H.S. dispensaries	70	180	214000	250000
3 other urban dispensaries	1430	1430	..	25000
4 rural dispensaries	500	..	..	10000
5 total	2000	2110	..	..
3 Dental clinics				
1 district clinics	100	325	30000	21640
2 tehsil clinics	..	150	20000	14240
3 mobile clinics	..	150	35000	14240
4 school clinics	..	1500	25000	18740
5 university clinics		60	20000	14240
6 total	100	2185	..	..
4 Grand total				

Note : Norms are taken from the sub-group papers prepared for the Fourth Plan.

[1] per primary health centre.

TABLE M. 8 : ESTIMATED CAPITAL AND RECURRING EXPENDITURE ON MEDICAL CARE DURING THIRD AND FOURTH PLANS

	capital cost (Rs. million) 4th plan	recurring cost (Rs. million)	
		1965-66	1970-71
1	6	7	8
1 Hospital service			
1 general beds (thousands)	2180	402	729
2 special beds (thousands)	125	150	200
3 beds at primary health centres (thousands)	653	130	418
4 total beds (thousands)	2958	682	1347
5 number of primary health centres (000)			
2 Dispensaries			
1 polyclinics	130	..	27
2 C.H.S. dispensaries	2	18	45
3 other urban dispensaries	..	36	36
4 rural dispensaries	..	5	..
5 total	132	59	108
3 Dental clinics			
1 district clinics	7	3	7
2 tehsil clinics	3	..	2
3 mobile clinics	5	..	2
4 school clinics	38	..	28
5 university clinics	1	..	1
6 total	54	3	40
4 Grand Total	3144	744	1495

TABLE M. 9. ESTIMATED CAPITAL AND CURRENT

	intake capacity (thousand)	
	1965-66	1970-71
1	2	3
1 post graduates	1·0	3·5
2 graduates	10·0	20·0
3 dental graduates	·6	1·7
4 nurses	5·8	30·0
5 auxillary-nurse midwives	9·0	12·0
6 special nursing	·3	1·2
7 auxillary-health workers	·3	5·0
8 pharmacists	1·5	6·0
9 sanitary health inspectors	2·9	17·0
10 physio-therapists	..	3·3
11 laboratory technicians	·5	6·0
12 opticians	·5	5·0
13 radiographers	..	5·0
14 dental hygendists	·1	1·2
15 dental mechanics	0·1	0·7
16 other paramedical personnel	8·1	13·4
total	40·7	131·0

Notes : All the norms of costs have been taken from the sub-group papers prepared for the Fourth Plan except for post graduates. In this case, the recurring and non-recurring costs per seat have been taken from Health Survey and Planning Committee.

[1] Non-recurring cost of Rs. 80000 and Rs. 25000 per seat for new college and old college (by expansion) respectively have been taken for the estimates. It is also assumed that 3000 seats will be provided in new colleges and 7000 in old colleges.

[2] Per enrolment.

EXPENDITURE ON TRAINING PROGRAMME

(enrolment) (thousands) 1965-66	(enrolment) (thousands) 1970-71	cost per seat Rs. capital	cost per seat Rs. recurring stipend per enrolment	cost per seat Rs. recurring other per seat	capital expenditure (Rs. mill.) Fourth Plan	recurring expenditure (Rs. million) 1966	recurring expenditure (Rs. million) 1971
4	5	6	7	8	9	10	11
1·4	5·0	100000		10,000	250	10	35
44·0	80·0	80000[1]		1600[2]	415	70	128
2·0	5·9	35000		8000	39	5	14
23·0	104·0	14000	900	4000	339	44	214
18·0	24·0	780c	720	1150	23	23	31
·3	1·3				5	1	2
·6	10·0	600	750	750	3	1	11
3·0	12·0	3000	900	240	11	3	12
2·9	17·0	3000	720	600	43	4	22
..	10·0	3600	1200	600	12	..	14
·5	6·0	2000	600	250	11	..	5
1·0	10·0	4500	1200	900	20	2	17
..	10·0	..	700	370	..	..	9
·1	1·2	3000	600	1150	3	..	2
·1	1·4	2000	600	1800	1	2	2
8·1	13·7				7	2	8
105·0	311·5				1182	165	526

Water supply and sanitation.—The Health Survey and Planning Committee has recommended that in 25 year period beginning with 1960-61, the entire country should be provided with adequate water supply and sanitation facilities. The *per capita* cost of providing these facilities in urban areas has been estimated at Rs. 50 for water supply and Rs. 75 for sanitation. *Per capita* cost in the rural areas for both water supply and sanitation has been put at Rs. 15. Taking the total population of India at 740 millions in 1985-86—200 million in urban areas and 540 million in rural areas—and applying the above norms, total investment under water supply and sanitation has been worked out at Rs. 28,500 million for the 25 year period ending 1985-86.

TABLE M. 10 : ESTIMATED COST OF POVIDING WATER SUPPLY AND SANITATION FACILITIES TO THE ENTIRE POPULATION BY 1985-86

(population in million)

	population to be covered by 1986	population covered by 1961	population remaining to be covered (2—3)	*per capita* cost Rs.	total cost (Rs. million)
1	2	3	4	5	6
urban					
1 water supply . .	200	49	151	50	7550
2 sanitation . .	200	25	175	75	13125
3 rural water supply and sanitation . .	540	10	530	15	7950
Total . .					28625

A sum of Rs. 890 million has been provided for urban water supply and sanitation schemes during the Third Plan. A separate provision of Rs. 670 million has been made which comprises of Rs. 350 million under the village water supply programme, about Rs. 160 million under health plan and Rs. 150 to 160 million under community development and welfare of backward classes, for the rural areas in the Third Plan. If the proposed programme has to be attained by the target year, a minimum investment of Rs. 2,500 million would be necessary for the Fourth Plan.

Control of Communicable diseases.—The total capital investment expenditure during the Fourth Plan is estimated at Rs. 79 million under control of communicable diseases'. The major investment expenditure under this head is expected to be for the setting up and expansion of T.B. clinics and mobile vans which together are expected to involve an investment of Rs. 49 million. The investment on V.D. clinics is estimated at Rs. 10 million. Associated current expenditure under 'control of communicable diseases' is expected to increase from Rs. 348 million in 1965-66 to Rs. 600 million in 1970-71.

Family Planning

The high rate of growth of population (2·4 per cent per year at present) is a serious threat to the aspiration of achieving higher capita consumption rapidly. The high priority to be accorded to family planning is commonly accepted. It is also agreed that the programme for family planning can be made more effective and acceptable if it is part of normal organization of medical and public health facilities. The scheme presented in Table N takes this into account. Although the programme aims to reduce birth rates rapidly, no credit need be taken at this early stage for any significant reduction in the rate of growth of population in the next 10—12 years. Whatever success is achieved in reducing birth rates may be set off by likely reduction of death rates. However one could hopefully expect significant results after 1975. In the meanwhile every effort has to be put to make the movement for birth control a success.

The total capital expenditure under Medical and Public Health adds up to Rs. 7,040 million during the Fourth Plan as against Rs. 1,750 million provided in the Third Plan. Table M. 11 briefly sums up the position.

TABLE M. 11 : ESTIMATED CAPITAL INVESTMENT EXPENDITURE IN THE THIRD AND FOURTH PLANS

(Rs. million)

	third plan	fourth plan
1 water supply and sanitation	1053	2500
2 hospitals, dispensaries, dental clinics and primary health centres	322	3144
3 control of communicable diseases	57	79
4 education and training	224	1182
5 family planning	61	36
6 others	36	100
7 total	1753	7041

The current revenue expenditure is anticipated to increase from Rs. 1,660 million in 1965-66 to Rs. 3,175 million in 1970-71. A part of this increase would result from the annual increments etc. Excluding these increases which are expected to be 3 per cent a year, the plan expenditure under Medical and Public Health is estimated at Rs. 3,300 million during the Fourth Plan.

TABLE M·12 : ESTIMATED RECURRING EXPENDITURE IN THE YEAR 1965-66, 1970-71

(Rs. million)

	1965-66	1970-71
1 hospitals, dispensaries, primary health centres and dental care	744	1495
2 control of communicable diseases	348	601
3 education and training	165	526
4 family planning	249	265
5 others	153	289
6 total	1659	3176

The total outlay on Medical and Public Health is thus expected to amount to Rs. 10,340 million during the Fourth Plan. Of this only about Rs. 250 million is expected to be in the private sector. The expenditure to be financed through the exchequer would be Rs. 10,090 million.

IV

Residential and Commercial Buildings

While outlay on housing is not as directly related to output as other investments, nevertheless it is necessary to ensure that the growing population is provided with minimum housing facilities even when there is serious presure resources from the demand of productive sectors. A developing economy cannot afford to spend larger resources on housing than are absolutely necessary, even then it cannot afford to ignore this modest claim for housing on the ground of high capital: output ratio. Beyond a certain point housing shortage not only causes great inconveniences and dis-satisfaction specially in urban areas. but create inflation pressures just as shortage of other basic necessaties do. As a result of the growth of population and rapid urbanization, the problems of housing and urban development has already become serious in urban areas. In Calcutta, the problem has assumed alarming proportion. The shortage of houses in urban areas is estimated to have increased from 2·5 million houses in 1951 to 5 million houses in 1961. Even with the increased outlay on housing in the Third Plan, the shortage is feared to increase still further.

The Third Plan provides an investment of Rs. 12,750 million in housing and commercial construction as against Rs. 10,300 million in the Second Plan. This amount does not include investments made in housing by Ministries of Railways, Commerce and Industry, Communications and others as part of their investment programmes. It also excludes housing programmes financed from coal mines and other mining welfare funds, which are estimated to total upto about Rs. 2,250 million. Total investment in housing etc. in the Third Plan is thus estimated at Rs. 15,000 million, of which the investment financed by the public sector is about Rs. 4,250 million.

For the Fourth Plan, the investment in housing has been worked out on the assumption that further deterioration in housing will not be allowed after 1965 and that housing will be provided, though on a modest (and perhaps austerity) scale, for all additional rural and urban population.

According to the population projection given in the Third Plan, the total population is estimated to increase from 491·5 million at the end of 1965-66 to 554·7 million by the end of 1970-71—an increase of 63·2 million. Of this urban population is anticipated to grow from 94·5 million to 114·8 million an increase of 4 per cent per year. The balance of the increase of 42·9 million is expected to be in rural areas.

The average weighted cost of providing urban households modest living accommodation, including costs of development of land and provision of urban facilities is Rs. 1,000 per head. In rural areas it has been taken at Rs. 200 per head. On this basis the total investment cost on housing works out to Rs. 20,300 million in urban areas and Rs. 8,600 million in rural areas during the Fourth Plan (Table M. 13). Adding a provision of Rs. 2,100 million for all commercial buildings, total investment in this sector is estimated at Rs. 31,000 million.

TABLE M-13 : INVESTMENT IN HOUSING IN THE FOURTH PLAN

	Population in million			Increase in Fourth Plan (million)	Cost of housing per person (Rs.)	Total investment in the Fourth Plan (Rs. million)
	1961	1966	1971			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Total . . .	438·0	491·5	554·7	63·2		28900
2 Urban . . .	77·8	94·5	114·8	20·3	1000	20300
3 Rural	360·2	397·0	439·9	42·9	200	8600

As in the Third Plan, a part of the housing programme would be included in the programme of certain Ministries (*e.g.* Railways, Communications and Mines and Fuel). The investment estimates for their activities include items of expenditure on housing. As against the investment of Rs. 2,250 million in the Third Plan about Rs. 4,000 million is expected to be thus provided. The amount required to be shown separately under residential and commercial buildings will be only Rs. 27,000 million.

The investment of the Government in housing (other than that financed directly by Ministries) has increased steadily from Rs. 330 million in the First Plan, to Rs. 800 million in the Second Plan and Rs. 2,020 million[1] in the Third Plan. Its share in total investment in housing has increased from 8 per cent in the Second Plan to about 16 per cent in the Third Plan. If the poorer sections of the community are to be ensured of reasonable housing facilities, especially in the urban areas, the Government share in total investment must grow further in the Fourth Plan. A provision of Rs. 7,000 million (exclusive of Rs. 4,000 million mentioned above) is made in the public sector, representing about 26 per cent of the total investment of Rs. 27,000 million.

Inventories

An estimation of the investment requirements for building up inventories is beset with various difficulties. Firstly there is a conceptual problem of defining inventories in certain fields like agriculture, small scale industry, trade etc. Secondly, it is not clear from the data on investment in the private non-corporate sector whether and/or to what extent it includes inventories. Thirdly for some sectors like trade, there is practically no data whatsoever on investment. A rough estimate of the requirements of inventories during the Third Plan was made a few years ago, but the results are far from convincing[2]. In this paper no attempt has been made to estimate the inventory requirements of all sectors of the economy. The estimate of inventories is made only for the organised sector.

For the organised industrial sector (excluding mining and oil), the addition to inventories required during the Fourth Plan is estimated at

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[1] Including Rs. 600 million to be provided by the Life Insurance Corporation.

[2] A. K. Sen—*Working Capital in the Indian Economy.*

Rs. 11,600 million. This has been derived by applying the coefficient Ki/V (ratio of working capital to value of output) to the value of output in each industry. The coefficients of Ki/V have been derived for a number of industries from the Annual Survey of Industries, 1960. For new schemes for which no previous norms were available. these were taken from projects reports or were roughly estimated in the light of the norms for similar industries. The results of this exercise are given in Table M. The estimated inventory requirements of Rs. 11,600 million constitute nearly 21 per cent of the fixed investment of Rs. 51,000 million provided for organised industry.

For the mining sector, an analysis of the balance sheet of some of the coal mining and iron ore companies shows that on an average, working capital constitutes some 20 per cent of the value of output. For washeries, Ki/V is estimated to be 15 per cent. For petroleum products and their distribution, the norms are derived rom the balance sheets of the private sector refineries. Applying this norm to the output of mining and oil sector, the increase in inventories during the Fourth Plan under mining and oil is estimated at Rs. 2,430 million.

For railways and posts and telegraphs which are other major large scale enterprises, no separate provision for working capital is necessary as the provision for these enterprises includes working capital, if any, required by them. The same is true about investment in irrigation—major, medium and minor.

Thus the total addition to inventories in the organised sector as a whole, is estimated at Rs. 14,000 million. In the absence of any knowledge about the unorganised sector, no separate provision is made for that sector.

Out of the total of Rs. 14,000 million for inventories in the Fourth Plan roughly Rs. 6,500 million are expected to be in the public sector and Rs. 7,500 million in the private sector. This distribution has been made in relation to breakdown of the fixed investment in organised industry and mining between the public and the private sectors indicated in Table (M) appended.

V

On the basis of the estimates made in the preceding section, total investment in the Fourth Plan would be about Rs. 2,20,000 million—about Rs. 1,40,000 million in the public sector and Rs. 80,000 million in the private sector. In addition, a current outlay of Rs. 22,000 million would be necessary in the public sector. The total plan outlay of the public sector in the Fourth Plan comes to Rs. 1,64,000 million. A breakdown of the current outlay of the public sector and net investment (of public sector) by major heads is given in Table M. 14.

TABLE M-14 : ESTIMATED NOT INVESTMENT IN THE PUBLIC AND PRIVATE SECTORS AND CURRENT OUTLAYS OF THE PUBLIC SECTOR IN THE FOURTH PLAN : INDIA 1966-71.

(Rs. million)

	head	total outlay in public sector	current outlay in public sector	net investment		total
				public sector (2)—(3)	private sector	
	(1)	(2)	(3)	(4)	(5)	(6)
1	agriculture and allied activities .	16900	6400	10500	10300	20800
2	including minor irrigation .	2350	..	2350	2350	4700
3	major and medium irrigation .	11200	..	11200	..	11200
4	large-scale industry and mining .	35800	..	35800	28600	64400
5	village and small scale industry .	5000	2000	3000	4000	7000
6	power	22500	..	22500	500	23000
7	transport, communication & tourism	32750	..	32750	7750	40500
8	education & scientific research .	16450	10000	6450	250	6700
9	education	13950	8700	5250	250	5500
10	scientific research . . .	2500	1300	1200	..	1200
11	medical and public health & family planning	10050	3300	6750	250	7000
12	including drinking water supply	2500	..	2500	..	2500
13	housing (urban & rural) commercial buildings and urban improvement . . .	7000	..	7000	20000	27000
14	sub-total net fixed investment .	157650	21700	135950	71650	207600
15	inventories	6500	..	6500	7500	14000
	net investment	164150	21700	142450	79150	221600

TABLE (M.)

ESTIMATE OF INVESTMENT IN ORGANISED INDUSTRIES

industry	unit	capacity					fixed	
		1965-66	1970-71	addition during fourth plan			per unit (000 Rs.)	
				NU	SE	total	NU	SE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Metallurgical industries								
1. iron and steel (ingots)	th. tonnes	9200	20000	5840	4960	10800	1610	1005
2. alloy, tools & special steel	,,	51	500	..	449	449	8000	5400
3. aluminium (ingots)	,,	69	280	146	65	211	10000	7500
4. copper ,,	,,	17	70	..	53	53	..	6000
5. lead ,,	,,	9	25	12·5	3·5	16	2500	1500
6. zinc ,,	,,	18	60	17	25	42	5000	3000
Chemical and allied industries								
7. fertilizers—N_2	th. tonnes	640	2000	1200	160	1360	3000	2000
8. fertilizers—P_2O_5	,,	270	1250	700	280	980	500	300
9. caustic soda—chemical	,,	20	60	30	10	40	600	500
10. —electrolytic	,,	340	700	250	110	360	1500	1250
11. soda ash	,,	360	720	300	60	360	700	500
12. sulphuric acid	,,	1500	3500	1800	200	2000	120	90
13. organic chemicals	Rs. million	..	..	..	..	..	..	..
14. dyestuffs	th. tonnes	12	16	..	4	4	30000	20000
15. calcium carbide	,,	58	85	15	12	27	900	600
16. drugs and pharmaceuticals	Rs. million	1750	3000	600	650	1250	750	500
17. plastics	th. tonnes	90	350	200	60	260	3000	2500
18. auto-tyres	th. nos.	4600	8200	..	3600	3600	135	90
19. cycle tyres	m. nos.	20	45	..	25	25	4000	3000
20. synthetic rubber	th. tonnes	30	120	80	10	90	5000	3000
21. paper and paper board	,,	770	1500	300	430	730	2500	2000
22. cement	,,	14000	26000	10000	2000	12000	160	120
23. glass and glassware	,,	500	1000	300	200	500	560	400
24. opthalmic glass	tonnes	300	450	..	150	150	87	70
25. refractories	th. tonnes	1430	2400	300	670	970	200	45
26. naptha cracking units, ethylene, propyline etc.	,,	285	1000	715	..	715	350	..
27. misc. inorganic chemicals		..	..	..	..	..	..	..
28. other chemicals		..	..	..	..	..	..	..
Textiles								
29. cotton yarn	th. tonnes	1130	1360	115	115	230	2650	2100
30. cotton cloth	m. metres.	5600	7100	750	750	1500	430	160
31. rayon filament	th. tonnes	70	100	..	30	30	15000	11000
32. staple fibre	,,	30	90	20	40	60	4500	3500
33. chemical pulp	,,	120	250	80	50	130	2000	1500
Mining								
34. iron ore mining	th. tonnes	27000	66000	24000	15000	39000	40	15
35. coal mining	,,	89000	14000	41000	10000	51000	60	40
36. coal washeries (raw coal washed)	,,	22400	54500	32100	..	32100	25	16
37. petroleum refining	,,	17000	30000	8000	5000	13000	70	20
38. lubricating oils	,,	100	800	600	100	700	500	400
39. oil exploration	,,	6000	12500	6500	..	6500	423	..
40. distribution	,,	12750	22700	9950	..	9950	80	..
41. other mining		..	..	..	..	..	..	..
Transport equipment								
42. steam locomotives	nos.	250	..	..	..	..	..	..
43. diesel locomotives	nos.	70	350	..	280	280	..	450
44. electric locomotives	nos.	70	200	..	130	130	..	550
45. wagons	th. nos.	40	60	20	..	20	4000	..
46. passenger coaches	nos.	1900	2200	..	300	300	..	200
47. motor cars	th. nos.	30	45	..	15	15	..	4500
48. jeeps and station wagons	,,	10	20	..	10	10	..	4500
49. commercial vehicles	,,	54	150	..	96	96	..	12500
50. ancill. components and parts incl. foundry and forge	Rs. million	..	..	..	..	..	..	..
51. motor cycles and scooters	th. nos.	55	150	..	95	95	..	300
52. bicycles	th. nos.	2200	3500	..	1300	1300	..	25
53. merchant ships	th. GRT	60	120	15	45	60	9000	5000
54. marine diesel engines	th. H.P.	75	200	..	125	125	..	240
55. aircrafts completed and parts	Rs. million	..	200	..	200	200	..	500

AND MINING : INDIA 1965-66—1970-71.

investment total (Rs. millions)			value of output (Rs. million)			inventories (Rs. million)			total investment (Rs. million)
NU	SE	total	1965-66	1970-71	ki/v	1965-66	1970-71	increase	(col. 12 + col. 18)
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
10978	*8296*	*19274*				*845*	*2103*	*1258*	*20532*
9402	4985	14387	3190	6325	23	734	1455	721	15108
..	2425	2425	179	1750	23	41	402	361	2786
1460	488	1948	204	720	24	49	173	124	2072
..	318	318	49	198	24	12	47	35	353
31	5	36	11	30	24	3	7	4	40
85	75	160	21	78	24	6	19	13	173
12301	*3351*	*15652*				*2483*	*5933*	*3450*	*19102*
3600	320	3920	600	2100	50	300	1050	750	4670
350	84	434	228	855	50	114	427	313	747
18	5	23	207	414	17	35	70	35	571
375	138	513							
210	30	240	128	244	17	22	41	19	259
216	18	234	180	450	17	31	77	46	280
1305	210	1515	551	1496	18	99	269	170	1685
..	80	80	260	338	42	109	142	33	113
14	7	21	44	64	17	7	11	4	25
450	325	775	1750	3000	37	648	1110	462	1237
600	150	750	225	810	46	104	373	269	1016
..	324	324	722	1330	23	166	306	140	464
..	75	75	63	140	23	14	32	18	93
400	30	430	90	300	46	41	138	97	527
750	860	1610	1005	1800	19	191	342	151	1761
1600	240	1840	696	1334	77	49	93	44	1884
168	80	248	230	434	21	48	91	43	302
..	11	11							
60	30	90	168	300	26	44	78	34	124
250	..	250	125	350	17	21	59	38	288
135	64	199	200	340	17	34	58	24	223
1800	270	2070	1353	3887	30	406	1166	760	2830
878	*907*	*1785*				*1210*	*1580*	*370*	*2155*
305	242	547	3710	4474	10	371	447	76	623
323	120	443	4771	6016	14	668	842	174	617
..	330	330	644	920	20	129	184	55	385
90	140	230	112	335	20	22	67	45	275
160	75	235	100	200	20	20	40	20	155
8333	*1265*	*9598*				*2658*	*5088*	*2430*	*12028*
960	225	1185	228	558	20	46	112	66	1251
2460	400	2860	1842	2897	20	368	579	211	3071
803	..	803	646	1570	15	97	235	138	941
560	100	660	1560	3240	58	905	1879	974	1634
300	40	340	60	480	17	10	82	72	412
2750	..	2750	..	..	..	..	..	..	2750
..	..	..	..	.	..	1020	1816	796	796
500	500	1000	1060	1925	20	212	385	173	1173
465	*2237*	*2702*				*804*	*1781*	*977*	*3679*
..	..	..	83	..	..	..	..	..	..
..	126	126	102	435	29	30	126	96	222
..	72	72	74	168	29	21	49	28	100
80	..	80	680	935	21	143	196	53	133
..	60	60	247	260	21	52	55	3	63
..	68	68	350	600	23	81	138	57	170
..	45	45							
..	1200	1200	1350	3250	23	311	748	437	1637
250	250	500	200	400	23	46	92	46	546
..	28	28	85	204	16	14	33	19	47
..	33	33	219	457	16	35	72	37	70
135	225	360	100	206	67	67	134	67	427
..	30	30	30	80	13	4	10	6	36
..	100	100	..	160	80**	..	128	128	228

**Rough estimates.

TABLE M.—*contd.*

industry	unit	Capacity					fixed	
		1965-66	1970-71	addition during fourth plan			per unit (000 Rs.)	
				NU	SE	total	NU	SE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Electrical Equipment including Electronics								
56. generators-steam	th. kw.	1000	2600	600	1000	1600	150	90
57. —hydro	,,	850	1700	..	850	850	125	75
58. electric motors—below 150 kw.	,,	2240	8000	2760	3000	5760	50	30
59. —above 150 kw.	,,	250	2000	1050	700	1750	150	100
60. transformers—upto 33 kv	th. KVA	4000	8500	..	4500	4500	25	15
61. —above 33 kv.	,,	3000	16500	8000	5500	13500	40	25
62. capacitors	Rs. million	3	65	62	..	62	800	600
63. switchgears	,,	180	600	220	200	420	1100	800
64. turbines-steam	th. kw.	1000	2600	600	1000	1600	250	150
65. —hydro	,,	850	1700	..	850	850	125	80
66. A.C.S.R. Conductors incl. A.A. Conductor	th. tonnes	68	125	..	57	57	600	300
67. VIR & plastic coated wires	m. metres	700	1400	200	500	700	250	150
68. winding wires	th. tonnes	15	60	..	45	45	2500	2000
69. bare copper conductors	,,	10	5	..	..	..	..	..
70. paper insulated cables	k. metres	8046	16000	2500	5454	7954	6·7	4·35
71. dry core cables	,,	4000	8000	.:	4000	4000	10·5	6·0
72. cables	,,	480	650	..	170	170	24·85	21·75
73. electric fans	th. nos.	2800	4000	400	800	1200	25	15
74. house service meters	,,	2050	2500	..	450	450	..	15
75. lamps	mil. nos.	130	225	40	55	95	400	250
76. flourescent tubes	,,	7	30	5	18	23	2000	1000
77. radio receivers	th. nos.	700	2500	700	1100	1800	35	25
78. other electronics	Rs. million	..	..	..	..	..	..	..
79. storage batteries	000 nos.	800	2000	600	600	1200	40	25
80. dry batteries	m. nos.	330	650	..	320	320	90	65
81. refrigerators	th. nos.	32·8	120	..	87·2	87·2	..	650
82. air conditioners	,,	50	100	..	50	50	..	700
83. water coollers	,,	5·3	30	..	24·7	24·7	..	700
Industrial machinery etc.								
84. iron castings	th. tonnes	1000	2500	500	1000	1500	1000	1500
85. steel castings	,,	150	600	300	150	450	3400	1300
86. steel forgings	,,	150	600	300	150	450	4000	2500
87. steel structural fabrication	,,	1100	2200	600	500	1100	500	300
88. gear cutting (reduction year units)	tonnes	5000	15000	10000	..	10000	6	..
89. cranes	th. tonnes	60	120	20	40	60	2000	1500
90. ball and roller bearings	m. nos.	12	50	25	13	38	15000	10000
91. precision instruments	Rs. mill.	200	700	300	200	500	400	300
92. surgical instruments	th. pieces	2500	5000	..	2500	2500	11	8
93. machine tools	Rs. mill.	300	1000	550	150	700	2000	1500
94. diesel engines (excl. for transport)	th. nos.	72	140	..	68	68	800	500
95. power driven pumps		180	300	30	90	120	1800	1200
96. air compressor	Rs. mill.	75	200	100	25	125	600	400
97. power boilers	,,	200	600	..	400	400	..	1000
98. industrial boilers	,,	150	300	100	50	150	830	700
99. heavy plate & vessel works	th. tonnes	30	70	30	10	40	2000	1500
100. chem. drugs & pharm. machinery	Rs. mill.	90	450	315	45	360	600	500
101. metal & other heavy equipt.	th. tonnes	80	160	..	80	80	5000	2000
102. coal and other mining mach.	,,	45	75	30	..	30	7000	6000
103. cotton textile machinery	Rs. mill.	220	500	130	150	280	500	400
104. cement machinery	,,	80	160	30	50	80	750	400
105. sugar machinery	,,	120	250	130	..	130	750	500
106. paper machinery	,,	80	250	85	85	170	750	500
107. printing machinery	,,	30	100	50	20	70	1000	750
108. jute machinery	,,	35	35	..	..	..	..	..
109. dairy machinery	,,	25	50	..	25	25	200	150
110. building and road contn, mach.	,,	60	90	15	15	30	600	500
111. crawler tractors	n. s.	600	1200	..	600	600	..	75
112. dumpers	,,	600	1200	..	600	600	..	75
113. shovels	,,	100	250	..	150	150	..	75
114. road rollers	,,	1094	1500	..	406	406	..	3
115. tractors	th. nos.	14·5	60	35	10·5	45·5	3200	2500
Miscellaneous		..	..	..	..	..	..	..
116. sugar	th. tonnes	3570	5500	770	1160	1930	1000	750
117. other industries	Rs. million.	..	..	..	..	..	..	..
Grand total		..	..	..	..	..	..	..

NOTE :—*included in the value of production of generators.

TABLE M. —*contd.*

investment			value of output (Rs. million)			inventories (Rs. million)			total investment (Rs. mls.) col. (12) col. (18).
total (Rs. million)									
NU	SE	total	1965-66	1970-71	ki/v	1965-66	1970-71	increase	
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1681	*1356*	*3037*	..	..	..	*815*	*2373*	*1558*	*4595*
90	90	180	42	252	30	13	76	63	243
..	64	64	25	140	30	7	42	35	99
138	90	228	233	750	27	63	203	140	368
157	70	227	25	188	27	7	51	44	271
..	68	68	175	375	30	53	113	60	128
320	138	458	75	286	30	23	86	63	521
50	..	50	2	52	30	1	16	15	65
242	160	402	150	600	30	45	180	135	537
150	150	300	•	•	..	..	..	..	300
..	68	68	•	•	..	..	..	..	68
..	17	17	196	357	44	86	157	71	88
50	75	125	341	868	44	150	382	232	357
..	90	90	92	422	44	40	186	146	236
..	..	..	..	..	..	..	..	..	..
17	24	41	137	266	44	60	117	57	98
..	24	24	20	44	44	9	19	10	34
..	4	4	6	8	44	3	4	1	5
10	12	22	270	432	12	32	52	20	42
..	7	7	83	103	53	44	55	11	18
16	14	30	63	106	30	19	32	13	43
10	18	28	17	75	30	5	22	17	45
25	28	53	130	400	35	46	140	94	147
382	..	382	..	800	25	..	200	200	582
24	15	39	66	141	50	33	70	37	76
..	21	21	120	204	30	36	61	25	46
..	57	57	48	161	26	12	42	30	87
..	35	35	96	192	26	25	50	25	60
..	17	17	11	66	26	3	17	14	31
5792	*2777*	*8569*	..	..	..	*1801*	*4727*	*2926*	*11495*
500	500	1000	788	2069	17	134	352	218	1218
1020	195	1215 }	443	1373	17	75	233	158	2948
1200	375	1575 }							
300	150	450	1001	1950	40	400	780	380	830
60	..	60	4	11	76	3	8	5	65
40	60	100	117	390	52	61	203	142	242
375	130	505	84	224	8	7	18	11	516
120	60	180	180	550	42	76	231	155	335
..	20	20	50	100	28	14	28	14	34
1100	225	1325	250	1000	76	190	760	570	1895
..	34	34	135	226	13	17	29	12	46
54	108	162	38	63	42	16	26	10	172
60	10	70	60	160	..	..	..	..	70
..	400	400	125	500	35	44	175	131	531
83	35	118	100	250	35	35	88	53	171
60	15	75	69	180	35	24	63	39	114
189	23	212	80	366	14	11	51	40	252
..	160	160	360	840	88	317	739	422	582
210	..	210	66	242	88	58	213	155	365
65	60	125	200	400	50	100	200	100	225
23	20	43	45	125	35	16	44	28	71
98	..	98	120	200	35	42	70	28	126
64	43	107	70	160	35	25	56	31	138
50	15	65	5	80	35	2	28	26	91
..	..	..	27	35	17	5	6	1	1
..	4	4	25	50	35	9	18	9	13
..	7	16	30	45	31	9	14	5	21
..	45	45	50	100	70	35	70	35	80
..	45	45	50	100	29	14	29	15	60
..	11	11	10	20	29	3	6	3	14
..	1	1	36	48	29	10	14	4	5
112	26	138	70	250	70	49	175	126	264
1970	*1870*	*3840*	..	..	..	*657*	*920*	*763*	*4603*
770	870	1640	2738	3835	24	657	920	263	1903
1200	1000	2200	..	..	..	..	..	500	2700
42398	22059	64457	..	..	..	11273	24505	13732	78189

TABLE

ORGANISATION OF MEDICAL CARE AND HEALTH

	1960-61								
	no. of units	doctors	nurses	auxiliary nurses, mid-wives	dais/ mid-wives	auxiliary health workers	pharmacists/ compounders	Laboratory technicians	Sanitay inspectors
1	2	3	4	5	6	7	8	9	10
1. teaching hospital beds 2. district hospital beds 3. taluq hospital beds	131800	6600	33000	..	..	..	3300	2640	.. .. ..
4. special hospital beds	37000	1480	3700	..	..	..	740	740	..
5. primary health centres	2800	2800	2800	2800	..	..	2800	..	2800
6. (*a*) sub centres	8400	..	..	..	8400	..	..	..	..
7. (*b*) family planning service	..	..	..	..	..	..	..	..	..
8. (*c*) public health service	..	..	..	..	..	..	..	..	..
9. (*d*) laboratory service	..	..	..	..	..	..	..	..	..
10. dispensary—urban	1200	3600	..	..	..	..	2400	..	..
11. dispensary—rural	2900	2900	..	..	..	..	2900	..	..
12. leprosy subsidiary unit	135	135	..	..	..	..	135	..	..
13. S.E.T. centres	..	..	..	..	..	..	..	..	..
14. T.B. Training and demonstration centre	10	70	10	100	..	..	20	30	..
15. T.B. Clinic	220	660	..	1100	..	..	220	660	..
16. T.B. mobile clinic	..	..	..	..	..	..	..	..	..
17. malaria unit	391	391	..	..	..	..	..	..	..
18. filaria unit	48	48	..	240	..	..	..	48	..
19. V.D. clinic	83	83	..	..	..	..	..	..	..
20. B.C.G. teams	167	15	..	..	..	..	..	..	..
21. central family planning bureaux	..	..	..	..	..	..	..	..	..
22. state family planning bureaux	..	..	..	..	..	..	..	..	..
23. district family planning bureaux	..	..	..	..	..	..	..	..	..
24. urban family planning clinics	549	1100	549	..	..	..	..	..	..
25. rural family planning clinics	1100	1100	..	..	4400	..	..	..	..
26. medical college under graduate (seats)	5800	6000	..	..	..	..	..	..	..
27. post graduate (seats)	750	300	..	..	..	..	..	..	..
28. nursing school (seats)	4000	..	3200	..	..	..	..	..	..
29. auxiliary nurse-midwives centre (seats)	5000	..	1350	..	..	..	..	..	7800
30. public health laboratories	..	3500	..	..	..	..	..	..	..
31. (*a*) principal laboratories	..	..	..	..	..	..	..	..	..
32. (*b*) regional laboratories	..	..	..	..	..	..	..	..	..
33. (*c*) district laboratories	..	..	..	..	..	..	..	..	..
34. M.C.H. centres	4500	..	..	1500	7000	..	..	..	..
Administrations and organisations.									
35. (*a*) central									
36. (b) state	15	345	30	..	..	..	..	150	60
37. (*c*) regional	80	320	80	..	..	..	..	..	..
38. (*d*) district	322	1932	322	..	..	..	..	644	..
39. private practice	..	37000	..	..	..	..	..	..	..
Total	..	70379	45041	5740	19800	..	12515	4912	10660

P. P. Division,

N. .

PROGRAMME IN THE PUBLIC SECTOR : INDIA 1960-61—1975-66

1965-66								
no. of units	doctors	nurses	auxiliary/ nurses midwives	dais/ midwives	auxiliary Health workers	pharmacists compounders	laboratory technicians	sanitary inspectors
11	12	13	14	15	16	17	18	19
134000	6700	33500	..	..	..	3400	2700	..
75000	3000	7500	..	..	..	1500	1500	..
5223	5223	5223	5223	..	..	5223	..	5223
15669	..	..	..	15669	..	..	..	..
..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..
1500	3000		..	..	..	3000	..	..
500	500	..	..	..	..	500	..	..
235 875	235	..	..	..	..	235	..	..
15	105	105	..	..	..	30	45	..
235	700	1200	..	..	..	235	700	..
..	..	..	..	..	..	..	..	..
391	391	..	..	..	..	..	..	..
51	51	..	255	..	..	..	51	..
189	189	..	..	..	..	..	..	..
767	15	..	..	..	..	..	..	..
1	1	..	..	..	..	..	..	..
15	15	..	..	..	..	..	..	..
80	240	..	..	..	..	..	..	..
1500	3000	3000	..	..	..	..	..	..
5223	5223	..	20892	..	..	..	..	..
10000	10000	..	..	..	..	..	..	..
1000	400	..	..	..	..	..	..	..
5800	..	4600	..	..	..	..	..	..
9000	..	2400	..	..	..	..	..	..
..	4200	..	..	..	..	..	..	9600
7	14	..	..	..	..	..	42	..
4	4	..	..	..	..	..	16	..
121	121	..	..	..	..	..	484	..
10000	..	..	5000	15000	..	..	..	..
15	345	30	..	..	..	..	150	60
80	320	80	..	..	..	..	..	..
322	1932	322	..	..	..	..	644	..
	41000							
..	86939	57960	31370	30669	..	14123	6332	14883

April 1964

TABLE N.

ORGANISATION MEDICAL CARE AND HEALTH PROGRAMME IN THE

	1970-71								
	no. of units	doctors	nurses	auxiliary nurses midwives.	dais/ mid-wives	auxiliary health workers	pharmacists compounders	laboratory/ technicians	sanitary inspectors
1	20	21	22	23	24	25	26	27	28
1. teaching hospital beds							6100	4900	..
2. district hospital beds	24300	12150	60750	..	..	..			..
3. taluq hospital beds						..	2000	2000	..
4. special hospital beds	100000	4000	10000	..	..				
5. primary health centres	5223	5223	10446	..	..	5223	5223	..	5223
6 (*a*) sub centres	31338	..	..	31338	..	31338	..	..	..
7 (*b*) family planning service	..	5223	..	10446	..	..	..	..	15669
8. (*c*) public health service	..	..	..	..	..	..	..	5223	..
9. (*d*) laboratory service	..	..	..	..	..	..	4000	..	..
10. dispensary-urban	2000	6000	..	..	..	..	..	..	..
11. dispensary-rural	..	..	..	..	..	..			
12. Leprosy subsidiary unit	345	345	..	..	..	..	345	..	..
13. S.E.T. centres	5100	..	..	..	..	..	..	..	..
14. T.B. training and demonstration centre	20	140	140	..	..	..	40	60	..
15. T.B. clinic	435	1305	2175	..	..	..	435	1305	..
16. T.B. mobile clinic	100	200	200	..	..	..	..	300	..
17. malaria unit	391	391	..	..	..	..	..	111	..
18. filaria unit	111	111	..	555	..	..	..	..	..
19. V.D. clinic	400	400	..	..	..	..	..	..	..
20 B.C.G. team	207	16	..	..	..	..	..	..	..
21 central family planning bureaux	1	1	..	..	..	..	..	..	..
22. state family planning bureaux	15	15	..	..	..	..	..	..	..
23. district family planning bureaux	322	966	..	..	..	..	..	..	..
24. urban family planning clinics	2400	2400	4800	..	..	..	..	..	..
25. rural family planning clinics	..	..	..	..	..	..	..	..	..
26. medical college under graduate (seats)	20000	20000	..	..	..	..	..	..	..
27. post graduate (seats)	3500	1400	..	..	..	..	..	..	..
28. nursing school (seats)	30,000	..	24000	..	..	..	..	..	..
29. auxiliary nurse-midwives centre (seats)	12000	..	3250	..	..	..	..	..	11700
30. public health laboratories	..	5100	..	..	..	..	..	..	
31. (*a*) principal laboratories	15	30	..	..	..	..	..	90	..
32. (*b*) regional laboratories	80	80		..	..	..	..	320	..
33. (*c*) district laboratories	322	322	..	..	..	..	..	1288	..
34. M.C.H. centres	8400	..	..	8400	8400	..	..	..	..
35. Administrations and organisations	..	..	..	..	..	..	..	..	..
35. (*a*) central								150	60
36. (*b*) state	15	345	30	..	..	..	..	..	..
37. (*c*) regional	80	320	80	..	..	..	..	644	..
38. (*d*) district	322	1932	322	..	..	..	..		
39. private practice	..	45000	..	..	..	..	..	..	..
	..	113415	116193	50739	8400	36561	18143	16391	32652

1—(*contd.*)

PUBLIC SECTOR INDIA. 1960-61—1975-76.

1975-76

no. of units	doctors	nurses	auxiliary nurses/ midwives	dais/ midwives	auxiliary health workers	pharmacists compounders	laboratory technician	sanitary inspector
29	30	31	32	33	34	35	36	37
100000	6250	28000	..	..	..	2500	2500	..
72000	4000	18000	..	..	..	1800	1800	..
225000	12000	60000	..	..	..	5600	5600	..
123000	4920	12300	..	..	..	2460	2460	..
10450	10450	20900	..	..	10450	10450		10450
62700	..	..	62700	..	62700	..	..	..
..	10450	..	20900	..	..	..	..	..
..	..	..	..	..	..	..	..	31350
..	..	..	..	..	..	..	10450	..
11000	33000	..	11000	11000	..	22000	..	..
..	..	..	..	..	..	..	..	..
500	500	..	..	..	..	500	..	..
7500	..	..	..	..	..	..	..	..
25	175	175	..	..	..	25	75	..
625	1875	3125	..	..	..	625	1875	..
250	500	500	..	..	..	..	750	..
391	391	..	..	..	..	..	..	..
150	150	..	750	..	..	..	150	..
625	625	..	..	..	..	..	..	..
300	16	..	..	..	..	..	..	..
1	1	..	..	..	..	..	..	..
15	15	..	..	..	..	..	..	..
322	966	..	..	..	..	..	..	..
3000	3000	6000	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..
25000	25000	..	..	..	..	..	..	..
5000	2000	..	..	..	..		..	..
30000	..	24000	..	..	..	..	..	..
15000	..	4050	..	..	..	..	..	..
..	6200	..	..	..	..	..	..	14200
15	30	..	..	..	..	..	90	..
80	80	..	..	..	..	..	320	..
322	322	..	..	..	..	..	1288	..
..	..	..	..	..	..	..	..	..
15	345	30	..	..	..	..	150	60
80	320	80	..	..	..	..	..	..
322	1932	322	..	..	..	..	322	..
	50000		..	..	..	..	..	..
..	175513	177482	95350	11000	73150	45960	27830	56060

GMGIPND—MNS—14PC—19-6-64—2,000